VSMP Administrative Guidance Manual

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1.0 Introduction

This Administrative Guidance Manual (Manual) was prepared for Campbell County, the VSMP Authority, to comply with 9VAC25-870-148 – VSMP and erosion and sediment control administrative requirements to implement and enforce the regulations and includes guidance for reviewing stormwater pollution prevention plans (SWPPPs), obtaining and releasing of bonds, completing site inspections, reporting and recordkeeping, enforcement, and long-term maintenance and inspection programs.

This manual is also intended to provide guidance to the development community regarding requirements and expectations for erosion and sediment control and stormwater management plan submittals, in accordance with 9VAC25-840 and 9VAC25-870, respectively.

For reference, the Virginia Stormwater Management Act (§62.1-44.15:24 et seq), the VSMP Regulations (9VAC25-870), and Campbell County's Stormwater Management Ordinance can be found in Appendix A, B, and C, respectively. Please note the Virginia law and regulations provided may not be the latest; refer to http://townhall.virginia.gov/L/ViewBoard.cfm?BoardID=103 for the latest documents.

The information contained in this document is subject to change without notification and may be updated for compliance with any subsequent changes in laws and regulations.

2.0 Applicability

2.1 Single-Family Residential Dwelling Land-Disturbing Activity

2.1.1 Agreement-in-lieu-of: The construction of a single family detached residential structure, with or outside of a common plan of development or sale, equal to or less than 5 acres, may be eligible for an agreement in-lieu-of a stormwater management plan. This agreement shall not require a registration statement or the Department's portion of the state permit fee for coverage under the General Permit for Discharges of Stormwater from Construction Activities (General Permit).

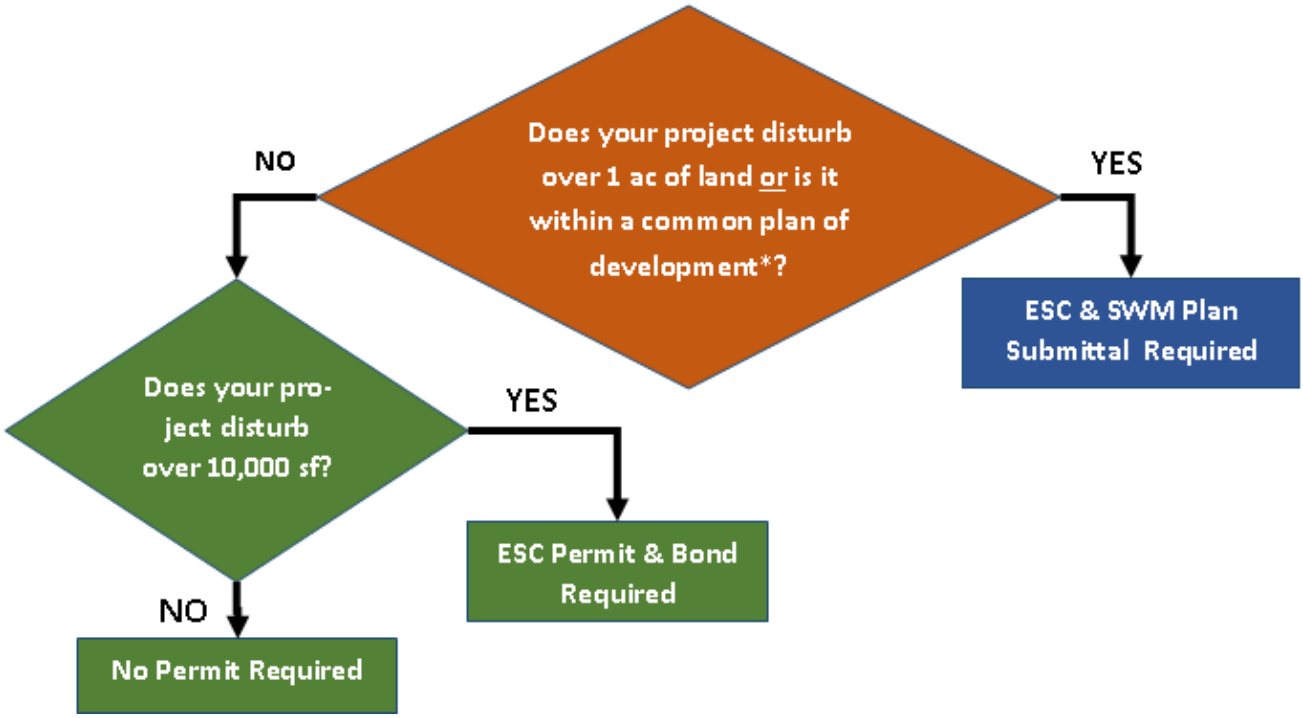
2.1.2 Requirements: Even though a registration statement for coverage under the General Permit is not required for such a structure, the land-disturbing activity must adhere to the requirements of the General Permit, including, but not limited to preparation of an Erosion and Sediment Control Plan, a Stormwater Management Plan (quality and quantity controls), a Pollution Prevention Plan, long-term maintenance agreement, and construction record drawing.

At the discretion of the locality, an agreement in-lieu-of may waive the requirements for the plans and/ or construction record drawing to be signed by a licensed professional. If the VSMP Authority waives the requirements for a licensed professional to complete the plans and/or construction record drawings, then subsequent references to the requirement of a licensed professional seal and signature in the Administrative Guidance Manual and its appendices shall also be waived.

2.2 All Other Land-Disturbing Activities

Pursuant to § 62.1-44.15:34 of the Code of Virginia, a stormwater management (SWM) plan and related submittals are required if a land-disturbing activity, which is not a single-family residential dwelling land-disturbing activity, is

1. Equal to or greater than one (1) acre, and/or
2. Part of a Common Plan of Development or Sale (*Refer to section 3.1 below for exceptions and additional information).



3.0 Supplemental Guidance

3.1 Common Plan Of Development or Sale

As per the Virginia Department of Environmental Quality Virginia Stormwater Management Program (VSMP) Frequently Asked Questions (FAQ), the following provides clarification regarding applicability of the common plan of development or sale clause in the VSMP regulations.

3.1.1 Definition of a 'Plan' in a Common Plan of Development: 9VAC25-870-10 (Definitions) of the VSMP regulations describes a common plan of development as "a contiguous area where separate and distinct construction activities may be taking place at different times on different schedules." Examples of these "common plans of development" meeting this definition include site plans and subdivision plans as defined in § 15.2-2201 (Definitions) of the Planning, Subdivision of Land and Zoning chapter of the Code of Virginia, or as defined by a locality in an ordinance adopted pursuant to this chapter.

3.1.2 Applicability: Individual lots within existing residential, commercial or industrial site plans and subdivision plans that were platted prior to July 1, 2004 may be considered separate land-disturbing activities and require a local VSMP permit and/or a registration statement under the General Permit, except as noted in 3.1.4. July 1, 2004 is the date that provisions for common plans of development were first incorporated into the Virginia Stormwater Management Act. Previous to that date,

the term was not used or defined. Lots within such platted plans or subdivisions that disturb less than one acre do not have to obtain coverage under 2014 Construction General Permit. Lots within such platted plans or subdivisions that disturb one acre or greater would have to obtain coverage under the 2014 Construction General Permit.

3.1.3 Options for Compliance: If a local VSMP permit is deemed required for the land disturbance within a 'common plan of development', the applicant has two options:

1) transfer the original VSMP from the developer to the applicant or

2) apply for new permit coverage.

3.1.4 Exceptions: The VSMP Authority may elect to waive permit coverage under the following situations.

1) Single-Family Homes: For land distributing activity less than 1 acre and within a common plan of development, where the stormwater management plan for the larger common plan of development or sale provides permanent control measures (ie. stormwater management facilities for quantity and quality controls) encompassing the single family residence in accordance with 9VAC25-880-50 , the state will authorize coverage automatically (no registration statement is needed) and the Applicant will not have to pay the Department (DEQ) portion of fee.

2) When the 'common plan of development' construction documents and SWPPP accounted for stormwater management (quantity and quality) for the entire development, including grading plans and footprints of impervious surfaces for individual lots.

3) If less than one acre remains of the original common plan, the individual project may be treated as part of a less than one acre development and no permit would be required.

3.2 TMDL Specific Requirements

Bedford	Big Otter River	Final	Bacteria	Livestock access to streams, lack of streamside buffer/forest, agricultural runof, Straight pipes and failing septic systems
Bedford	James River	Final	Bacteria	Agricultural streamside fencing, agricultural land based reduction BMPs, Environmental quality incentives program, Chesapeake Bay watershed initiative, improve residential septic systems, reduce pet waste, CSO/Stormwater control measures

3.1 Exemptions

As per the Code of Virginia § 62.1-44.15:34 (Link to Code), "…the following activities are exempt, unless otherwise required by federal law."

3.1.1 Permitted surface or deep mining operations and projects, or oil and gas operations and projects conducted under the provisions of Title 45.1.

3.1.2 Clearing of lands specifically for agricultural purposes and the management, tilling, planting, or harvesting of agricultural, horticultural, or forest crops, livestock feedlot operations, or as additionally set forth by the Board in regulations, including engineering operations as follows: construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage, and land irrigation; however, this exception shall not apply to harvesting of forest crops unless the area on which harvesting occurs is reforested artificially or naturally in accordance with the provisions of Chapter 11 (§ 10.1-1100 et seq.) or is converted to bona fide agricultural or improved pasture use as described in subsection B of § 10.1-1163.

3.1.3 Single-family residences separately built and disturbing less than one acre including additions or modifications to existing single-family detached residential structures, except for those within a larger common plan of development or sale.

3.1.4 Land-disturbing activities that disturb less than one acre of land area except for1) land-disturbing activity exceeding an area of 2,500 square feet in all areas of the jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the provisions of the Chesapeake Bay Preservation Act (§ 62.1-44.15:67 et seq.) or 2) activities that are part of a larger common plan of development or sale, where the land-disturbance activity within the larger common plan of development or sale (not the individual land disturbance) is one acre or greater of disturbance.

3.1.5 Discharges to a sanitary sewer or a combined sewer system.

3.1.6 Activities under a State or federal reclamation program to return an abandoned property to an agricultural or open land use.

3.1.7 Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original construction of the project. The paving of an existing road with a compacted or impervious surface and reestablishment of existing associated ditches and shoulders shall be deemed routine maintenance if performed in accordance with this subsection.

3.1.8 Conducting land-disturbing activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment. In such situations, the VSMP Authority shall be advised of the disturbance within seven days of commencing the land-disturbing activity and compliance with the administrative requirements of subsection A is required within 30 days of commencing the land-disturbing activity.

3.2 Exceptions

3.2.1 The Authority may grant exceptions to the provisions of Part II B or Part II C of 9VAC25-870. An exception may be granted provided that (i) the exception is the minimum necessary to afford relief, (ii) reasonable and appropriate conditions shall be imposed as necessary upon any exception granted so that the intent of the Act and this chapter are preserved, (iii) granting the exception will not confer any special privileges that are denied in other similar circumstances, and (iv) exception requests are not based upon conditions or circumstances that are self-imposed or self-created.

3.2.2 Economic hardship alone is not sufficient reason to grant an exception from the requirements of this chapter.

3.2.3 Under no circumstance shall the VSMP Authority grant an exception to the requirement that the land-disturbing activity obtain required state permits, nor approve the use of a BMP not found on the Virginia Stormwater BMP Clearinghouse Website, except where allowed under Part II C (9VAC25-870-146 et seq.) of this chapter.

3.2.4 Exceptions to requirements for phosphorus reductions shall not be allowed unless offsite options available through 9VAC25-870-69 have been considered and found not available.

3.2.5 A record of all exceptions granted shall be maintained by the VSMP Authority in accordance with 9VAC25-870-126.

3.3 Licensed Professional

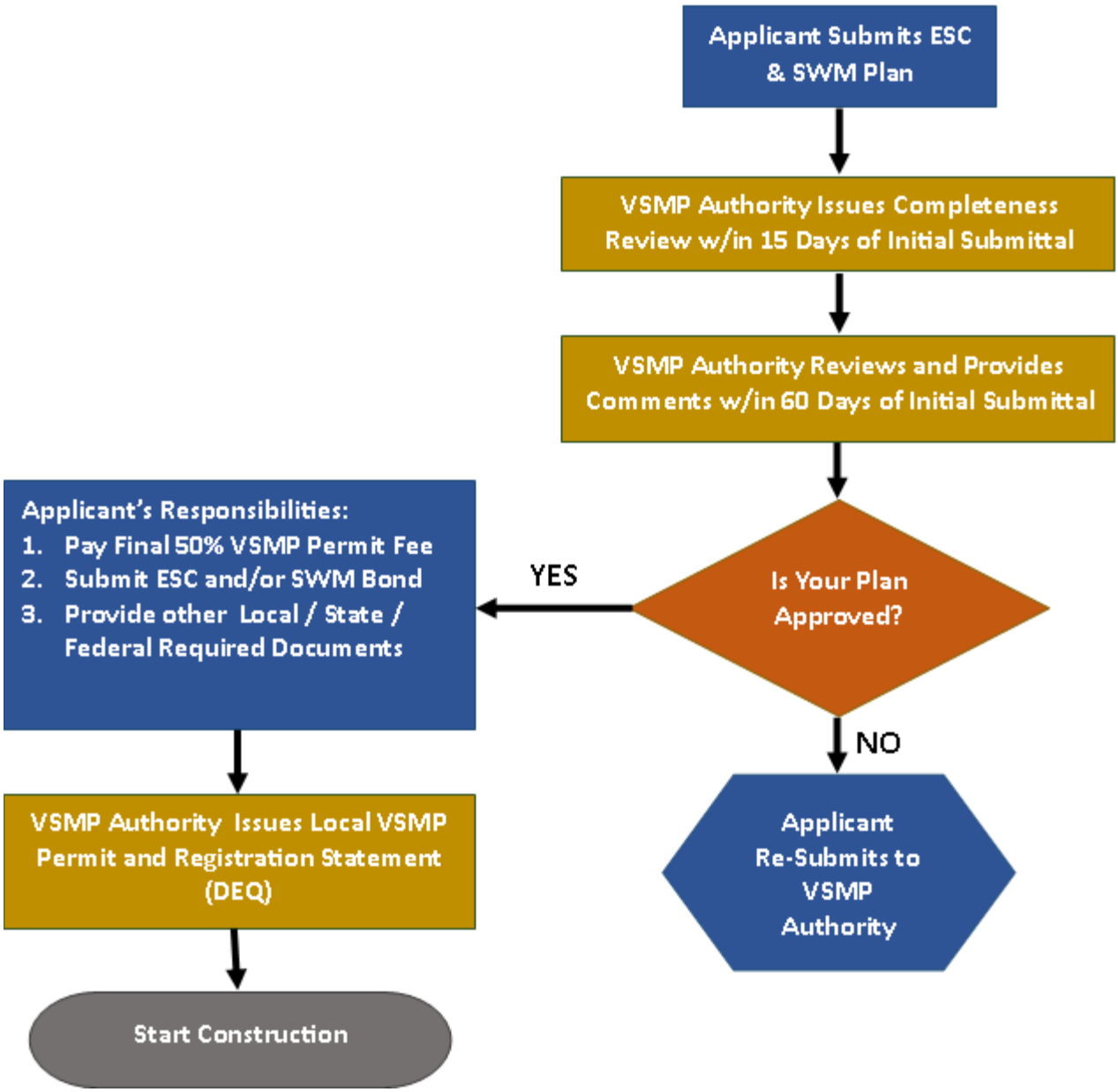
3.3.1 A Licensed Professional must certify the sections required by 9VAC25-870 and this document and shall be registered in the Commonwealth of Virginia pursuant to Article 1 (§54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia; this provision may be waived for an agreement-in-lieu-of plan. A Licensed Professional means one of the following: Professional engineer, land surveyor, architect, and landscape architect.

4.0 General SWM Plan Review Guidance

4.1 Process Description

The VSMP Project Process Plan provided in Appendix D is provided as a quick reference guide responsibilities and requirements of the Applicant (and Owner) and the Authority regarding plan approval, construction inspection, and post-construction inspections for a project, except as noted in section 2.1.

The following is a flow chart summarizing the VSMP Project Process Plan.



4.2 Application for Coverage under the General Permit for Discharges of Stormwater from Construction Activities

Refer to responsibilities and notes provided in the VSMP Project Process Plan. The Department portion of the General Permit fee is provided in the Campbell County Stormwater Management Ordinance and shall be payable to Campbell County. A copy of the General Permit and Registration Statement can be found in Appendix E and F, respectively.

4.3 Local VSMP Permit Fees

Refer to responsibilities and notes provided in the VSMP Project Process Plan A summary of the local VSMP permit stormwater fees is provided in the Campbell County Stormwater Management Ordinance.

In addition to the local VSMP fees, the Authority may elect to impose an additional fee to complete reviews beyond the initial, first, and second (a total of three (3)) submittals of a project. In accordance with §62.1-44.15.36, this fee will be assessed as per the hourly rate of the reviewing agency to a maximum of $1,000.

4.4 Erosion and Sediment Control and Stormwater Management Plan Application Form & Checklist

Refer to responsibilities and notes provided in the VSMP Project Process Plan. The Erosion and Sediment Control and Stormwater Management Plan Application Form & Checklist can be found in Appendix G.

4.5 Completeness Review Form

Refer to responsibilities and notes provided in the VSMP Project Process Plan. The Completeness Review Form can be found in Appendix H.

5.0 Stormwater Pollution Prevention Plan

The Applicant must provide a Stormwater Pollution Prevention Plan (SWPPP) in accordance with 9VAC25-870-54, including but not limited to, an approved erosion and sediment control plan, an approved stormwater management plan, and a pollution prevention plan. For the convenience of the Applicant and the Authority reviewing the plan a Comprehensive SWPPP template is provided in Appendix I for the narrative portions of the SWPPP. The Applicant is encouraged to use this format to complete the required sections of the SWPPP.

NOTE: Sections 1 -Site Information, 2-Erosion and Sediment Control, 3-Pollution Prevention, and 4-Stormwater Management of the Comprehensive SWPPP are required for the plan review submittal, as noted below. **Sections 5 – Construction Inspections and Maintenance, 6-Training, and 7-Final Stabilization of the Comprehensive SWPPP are not required to be completed at time of plan review submittal. However, these sections must be completed by the Applicant and/or the Contractor prior to construction.** The Comprehensive SWPPP must be available at the construction site at all times during construction.

5.1 Erosion and Sediment Control Plan

The Applicant must provide the Authority a complete report, including narrative and calculations, as required, and plans meeting the requirements and provisions of the Campbell County Stormwater Management Ordinance and Section 1 of the Erosion and Sediment Control and Stormwater Management Plan Application Form & Checklist (Appendix G).

Erosion control notes are required to be included on the plans. These notes are provided in Appendix J.

5.1.1 Review Guidance

5.1.1.1 Report: If the Applicant uses the 'Comprehensive SWPPP' template, the Authority should confirm sections 1 and 2 are completed as noted below. If the Applicant submits the report in a different format, the Authority shall confirm the information in Section 1 of the Erosion and Sediment Control and Stormwater Management Plan Checklist and the items listed below are provided.

a. Refer to text within [ ] in Comprehensive SWPPP template for additional information and guidance.
b. Comprehensive SWPPP Template

<u>SECTION 1: SITE INFORMATION</u> - All sub-sections of Section 1 of the SWPPP template are to be completed by Applicant with the initial plan

submittal, except Section 1.2 items 1-Operator(s), 2-Site Supervisor(s), 3-Stormwater Manager and SWPPP Contact(s), 5-Subcontractor(s), 6-Responsible Land Disturber, and 7-Emergency 24 Hour Contact. ****However, Section 1.2 items 1, 2, 3, 5, 6, and 7 must be provided prior to construction.****

SECTION 2: EROSION AND SEDIMENT CONTROL - All sections are to be completed by Applicant with the initial plan submittal.

a. For Section 2.8 Structural Practices and Section 2.9 Vegetative Practices, the Applicant may either note 'not applicable' or delete those practices not required for the project.
b. Confirm calculations are provided in the Appendix or elsewhere in the report for the following practices.
    1. Diversion (3.12)
    2. Temporary sediment trap(s) (3.13)
    3. Temporary sediment basin(s) (3.14)
    4. Paved Flume (3.16)
    5. Stormwater conveyance channel(s) (3.17)
    6. Outlet Protection (3.18)
    7. Level Spreader (3.21)
    8. Temporary Vehicular Stream Crossing (3.24)
    9. Subsurface Drain (3.28)
c. Spot check the calculations for accuracy.
d. Confirm Section 2.11 Phased Construction Activities is completed.
e. Confirm the Section 2 Required Certification is signed and sealed by a Licensed Professional registered in the Commonwealth of Virginia pursuant to Article 1 (§54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia.

5.1.1.2 Plans: The Authority shall confirm the appropriate erosion and sediment control practices are proposed and, if so, designed in accordance with the Virginia Erosion and Sediment Control Handbook, Latest Edition (Handbook); refer to the standards and specifications found in the Handbook.

a. Confirm details for each proposed practice is provided.
b. Confirm general erosion and sediment control notes are provided.
c. Confirm compliance with Section 1 of the Stormwater Management Plan Checklist.
d. Confirm plans are signed and sealed by a Licensed Professional.

5.1.1.3 Resources

a. Virginia Erosion and Sediment Control Handbook: http://www.deq.state.va.us/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx

5.2 Stormwater Management Plan

The Applicant must provide the Authority a complete report, including narrative and calculations, as required, and plans meeting the requirements and provisions of the Campbell County Stormwater Management Ordinance nd the Erosion and Sediment Control and Stormwater Management Plan Application Form & Checklist.

5.2.1 Review Guidance

5.2.1.1 Report: If the Applicant uses the 'Comprehensive SWPPP' template, the Authority should confirm Sections 1 -Site Information, 2-Erosion and Sediment Control, 3-Pollution Prevention, and 4-Stormwater Management are completed. If the Applicant submits the report in a different format, the Authority shall confirm the information in Section 4 of the Comprehensive SWPPP, Section 2 of the Erosion and Sediment Control and Stormwater Management Plan Checklist, and the items listed below are provided.

a. Refer to text within [ ] in Comprehensive SWPPP template for additional information and guidance.
b. Confirm the required calculations are provided in the Appendix or elsewhere in the report.
c. Spot check the calculations for accuracy.
d. Confirm the Report is certified and is signed and sealed by a Licensed Professional registered in the Commonwealth of Virginia pursuant to Article 1 (§54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia.

5.2.1.2 Plans: The Authority shall confirm the appropriate stormwater practices are proposed and, if so, designed in accordance with the Virginia Stormwater BMP Clearinghouse. http://vwrrc.vt.edu/swc/

a. Confirm details for each proposed practice are provided.
b. Confirm required notes are provided.

c. Confirm compliance with Section 2 of the Erosion and Sediment Control and Stormwater Management Plan Checklist.
d. Confirm plans are signed and sealed by a Licensed Professional registered in the Commonwealth of Virginia pursuant to Article 1 (§54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia.
e. **Only the BMPs included in the Virginia Stormwater BMP Clearinghouse are permitted; localities shall not approve the use of BMPs not included in the Clearinghouse.**

5.2.2 Technical Requirements

NOTE: If the project is deemed 'Grandfathered' as per the Regulations, Part II C technical criteria found in 9VAC25-870 shall apply.

5.2.2.1 General Stormwater Management and BMP Design Guidance

a. DRAFT Virginia Stormwater Management Handbook (2nd Edition, 2013)

5.2.2.2 Runoff Reduction Method

a. Runoff Reduction Method Compliance Spreadsheets: Refer to Appendix K.

b. Examples and Guidance: Chapter 12 of the DRAFT Virginia Stormwater Management Handbook (2nd Edition, 2013)

5.2.2.3 Energy Balance Equation

a. Chapter 11.6 – Water Quantity Control of the DRAFT Virginia Stormwater Management Handbook (2nd Edition, 2013)

5.2.2.4 Karst Guidance

a. Stormwater Design Guidelines for Karst Terrain in Virginia, Appendix 6-B, of the DRAFT Virginia Stormwater Management Handbook (2nd Edition, 2013)

5.2.3 Allowable Calculation Methodologies

5.2.3.1 Hydrologic

a. For sites with watersheds exceeding 200 acres, the Soil Conservation Service (SCS) based methodology (TR-55 or TR-20) should be used for the design of stormwater management/BMP facilities.
b. If a site is less than 200 acres, SCS based methodology is preferred; however, modified rational method or rational method may be use at the discretion of the VSMP Authority.
c. The modified runoff curve number as provided by the runoff reduction spreadsheet for each drainage area should be used for water quantity calculations.

5.2.3.2 Hydraulic

a. Appendix 11-D – Stormwater Computer Models of the DRAFT Virginia Stormwater Management Handbook (2nd Edition, 2013)

5.2.4 Other Resources

1. BMP Clearinghouse: http://vwrrc.vt.edu/SWC/
2. Hydrologic Unit Code: http://www.deq.virginia.gov/mapper_ext/default.aspx?service=public/wimby
3. Soils Maps: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
4. Rainfall Values: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=va

5.3 Pollution Prevention Plan

A Pollution Prevention Plan must be completed prior to construction by either the Applicant or Contractor and must be included in the SWPPP located at the project site during construction. Refer to the Comprehensive SWPPP template also found in Appendix I.

The Authority is not required to review the Pollution Prevention Plan for plan approval.

5.3.1 Review Guidance

5.3.1.1 Refer to text within [ ] in Comprehensive SWPPP template for additional information and guidance.

5.3.1.2 Pollution Prevention Plan, required by 9VAC25-870-56, shall be developed, implemented, and updated as necessary and must detail the design, installation, implementation, and maintenance of effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:

1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
2. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and
3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
4. The pollution prevention plan shall include effective best management practices to prohibit the following discharges:
5. Wastewater from washout of concrete, unless managed by an appropriate control;
6. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
7. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
8. Soaps or solvents used in vehicle and equipment washing.
9. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls.

6.0 Other VSMP Permit Requirements

6.1 Long-Term Stormwater Facility Maintenance Agreement

A Long-Term Stormwater Facility Maintenance Agreement (Appendix L) must be submitted by the Applicant and approved by the Authority prior to review and approval prior to the approval of the stormwater management plan. Refer to responsibilities and notes provided in the VSMP Project Process Plan.

6.2 Erosion and Sediment Control and Stormwater Management Bonds / Letters of Credit

An Erosion and Sediment Control and Stormwater Management Bonds / Letters of Credit must be submitted by the Applicant and approved by the Authority prior to issuance of the VSMP permit for construction. The Applicant shall use the Erosion and Sediment Control and Stormwater Management Bond calculator also provided in Appendix M to determine the amount required for the bond or letter of credit. Refer to responsibilities and notes provided in the VSMP Project Process Plan.

Notes:

1. Bonds are not required for single family homeowners if the total land disturbance is less than five (5) acres.
2. The bond shall be provided for both erosion and sediment control and stormwater management; separate bonds will not be accepted.

7.0 Construction Inspections

Refer to responsibilities and notes provided in the VSMP Project Process Plan. A VSMP Permit & SWPPP Construction Inspection Report form is provided in Appendix N.

7.1 Resources

7.1.1 Virginia Erosion and Sediment Control Handbook: http://www.deq.state.va.us/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx

7.1.2 Stormwater management facilities construction guidance - BMP Clearinghouse: http://vwrrc.vt.edu/SWC/

8.0 Construction Closeout Documentation

8.1 Stormwater Management Facility Construction Record Report Requirements

Refer to responsibilities and notes provided in the VSMP Project Process Plan and the Construction Record Drawing Checklist for Permanent Stormwater Management Facilities (Appendix O).

8.2 Project Completion Form

Refer to responsibilities and notes provided in the VSMP Project Process Plan and the VSMP Project Completion Form (Appendix P).

8.3 Release of Erosion and Sediment Control and Stormwater Management Bonds / Letters of Credit

Refer to responsibilities and notes provided in the VSMP Project Process Plan.

9.0 Post-Construction Inspections

As per the recorded Long-Term Stormwater Management Facility Maintenance Agreement and the Campbell County Stormwater Management Ordinance, Campbell County shall enforce compliance of the post-construction inspections via use of a tracking program (TBD). The Post-Construction Inspection Checklist (Appendix Q) for the relevant BMP(s) shall be used to document post-construction inspections.

9.1 Inspection Frequency

Table 9.1 – Stormwater Management BMP Inspection Frequencies

BMP Classification	BMP Type	Minimum Inspection Schedule	Notes
1	Rooftop Disconnection	Every 5 Years	Owner shall inspect and provide documentation as per the requirements found on the Virginia Stormwater BMP Clearinghouse Website and the Administrative Guidance Manual for BMPs, except for BMP Classification 1 facilities, where Campbell County will be responsible for inspection. Campbell County will inspect all BMPs every 5 years.
1	Sheetflow to Vegetated Filter or Conserved Open Space	Every 5 Years	
1	Grass Channel	Every 5 Years	
1	Soil Amendments	Every 5 Years	
2	Permeable Pavement	Annually	
2	Infiltration	Annually	
2	Bioretention	Annually	
2	Dry Swale	Annually	
2	Wet Swale	Annually	
2	Filtering Practice	Annually	
2	Constructed Wetland	Annually	
2	Wet Pond	Annually	
2	Extended Detention Pond	Annually	
3	Vegetated Roof	Twice per year (Spring/Fall)	
3	Rainwater Harvesting	Twice per year (Spring/Fall)	
4	Manufactured/ Other BMP	Yearly or per manufacturer recommendations, whichever is more frequent.	Owner shall inspect and provide documentation according to manufacturer's guidelines and the Administrative Guidance Manual.

9.2 Review Guidance

The Virginia Stormwater BMP clearinghouse (http://vwrrc.vt.edu/swc/) contains updated specifications including maintenance and inspection guidelines for accepted practices within the Commonwealth of Virginia.

10.0 Reporting and Recordkeeping Guidance

10.1 Annual Reporting

On a fiscal year basis (July 1 to June 30), Campbell County shall report to the Department by October 1 of each year, in a format provided by the Department, the following information.

1. Information on each permanent stormwater management facility completed during the fiscal year to include type of stormwater management facility, geographic coordinates, acres treated, and the surface waters or karst features into which the stormwater management facility will discharge;
2. Number and type of enforcement actions during the fiscal year; and
3. Number of exceptions granted during the fiscal year.

10.2 Recordkeeping

Campbell County shall keep records in accordance with the following:

1. Project records, including approved stormwater management plans, shall be kept for three (3) years after state permit termination or project completion.
2. Stormwater management facility inspection records shall be documented and retained for at least five (5) years from the date of inspection.
3. Construction record drawings shall be maintained in perpetuity or until a stormwater management facility is removed.
4. All registration statements submitted in accordance with 9VAC25-870-59 shall be documented and retained for at least three (3) years from the date of project completion or state permit termination.

11.0 Enforcement Guidance

Portions of the following are an adaptation of the Stormwater Management Enforcement Manual prepared by the Virginia Soil and Water Conservation Board and the Virginia Department of Conservation and Recreation (DCR) dated February 2006. http://www.deq.state.va.us/Portals/0/DEQ/Water/Guidance/ChesBayPreservAct/StormwaterEnforcementManual.pdf

11.1 Introduction

Campbell County recognizes that its goal of effective enforcement may be accomplished in most cases through informal means by offering compliance assistance to the regulated community and ensuring that any noncompliance is corrected quickly. Nonetheless, Campbell County will use the full range of its enforcement authority as needed to deter violations and ensure that its mission to conserve and protect the environment and the health and well-being of the Commonwealth's citizens is fulfilled.

11.2 Authority

Campbell County is authorized by the Code of Virginia § 62.1-44.15:27 to establish and enforce the Virginia Stormwater Management Program (VSMP).

11.3 Violations

Campbell County may consider violations to include, but are not limited to:

1. No state permit registration;
2. No SWPPP;
3. Incomplete SWPPP;
4. SWPPP not available for review;
5. No approved erosion and sediment control plan;
6. Failure to install stormwater BMPs or erosion and sediment controls;
7. Stormwater BMPs or erosion and sediment controls improperly installed or maintained;
8. Operational deficiencies;
9. Failure to conduct required inspections; and/or
10. Incomplete, improper, or missed inspections.

11.4 Process

If a violation(s) is noted by the inspector, Campbell County may follow the subsequent general steps to enforce compliance of the regulations by issuing:

1. Verbal warning and inspection report;
2. Notice of Corrective Action;
3. Stop work order;
4. Emergency special orders;
5. An injunction; and

6. Civil penalty(ies).

11.5 Verbal Warning/Inspection Report

Under circumstances where an inspection reveals routine noncompliance that can be corrected within a reasonably short time, the Campbell County's Administrator may choose to issue a verbal warning accompanied by an inspection report that describes the specific problems and includes a schedule for correcting the noncompliance. A copy of the VSMP Permit & SWPPP Construction Inspection Report is found in Appendix N.

The purpose of the verbal warning is to give the regulated party responsible for the alleged noncompliance an opportunity to comply voluntarily and thus avoid sanctions that might be imposed by an escalated enforcement response.

11.6 Notice of Corrective Action

In accordance with § 62.1-44.15:37 of the Code of Virginia, when the Campbell County Administrator's initial attempts to secure a voluntary return to compliance are unsuccessful, the Administrator or Department may issue a Notice of Corrective Action (NOCA). Examples of situations where issuance of a NOCA is appropriate include the following:

1. When the regulated party has failed to correct the noncompliance at the site pursuant to a prior Verbal Warning;
2. Where inspections of a construction site indicate a continuing pattern of various routine noncompliance after Campbell County has issued one or more Verbal Warnings for specific noncompliance; and/or
3. Noncompliance at a construction site is causing an adverse impact to human health or the environment such as a discharge of sediment to a stream or wetland. This situation does not necessarily require prior issuance of a Verbal Warning.

The purpose of a NOCA is to inform the regulated party responsible for the alleged noncompliance of the facts surrounding the allegations, the applicable law, and the potential consequences for failing to address the situation, should the allegations prove true. The NOCA also gives the regulated party an opportunity to refute the allegations or to address the discrepancies described in the NOCA within a specified time.

It is important that field staff gathers sufficient evidence throughout the informal enforcement process to support escalating the enforcement response, should the need arise. For this reason, field staff should carefully document all of the steps of the informal process in inspection reports, photographs, telephones logs, and field notes.

<u>NOCA Process</u>

1. Except for special circumstances (e.g., ongoing adverse impacts to human health or the environment), past noncompliance should be documented in one or more

Verbal Warning and VSMP Permit & SWPPP Construction Inspection Report issued pursuant to the guidelines in this Manual.

2. Explain to the responsible party in easily understood terms (i) any noncompliance identified during the site inspection or investigation and (ii) describe specific measures needed to achieve compliance. Also explain any (i) documented history of noncompliance at the site, (ii) your decision to issue NOCA, (iii) the reasons for that decision, and (iv) the potential consequences, should the responsible party fail to complete the measures specified in the NOCA within the allotted time (i.e., may result in escalation to formal enforcement, such as a Stop Work Order and potentially a civil charge).
3. Complete the VSMP Permit & SWPPP Construction Inspection Report.
4. Draft the NOCA; refer to Appendix R - Example Notice of Corrective Action letter.
5. Deliver the approved NOCA by hand or send it by certified mail.
6. Conduct a follow- up inspection to ensure compliance.
7. Under circumstances where the responsible party has not corrected the problem or where significant new noncompliance is identified and if the responsible party has good reason for needing a short extension to complete the agreed upon measures or if the new noncompliance is minor and can be corrected immediately, issue a second NOCA.
8. If professional judgment dictates that issuing a second NOCA is not appropriate, initiate a Stop Work Order by discussing the facts of case with the Administrator.

11.7 Stop Work Order

In accordance with § 62.1-44.15:37 of the Code of Virginia, if a Permittee fails to comply with the verbal warnings, inspection reports recommended corrective actions, and/or NOCA, Campbell County or Department may issue an order requiring the owner, Permittee, person responsible for carrying out an approved plan, or person conducting the land-disturbing activities without an approved plan or required permit to cease all land-disturbing activities until the violation of the permit has ceased, or an approved plan and required permits are obtained, and specified corrective measures have been completed.

The stop work order shall become effective upon service on the person by mailing, with confirmation of delivery, sent to his address specified in the land records of the locality, or by personal delivery by an agent of the VSMP Authority or Department.

11.8 Emergency Special Orders

In accordance with § 62.1-44.15:25 and § 62.1-44.15:37 of the Code of Virginia, if Campbell County or the Department finds that any such violation is grossly affecting or presents an imminent and substantial danger to (i) the public health, safety, or welfare or the health of animals, fish, or aquatic life; (ii) a public water supply; or (iii) recreational, commercial, industrial, agricultural, or other reasonable uses, it may issue, without advance notice or hearing, an emergency order directing such person to cease immediately all land-disturbing activities on the site and shall provide an opportunity for a

hearing, after reasonable notice as to the time and place thereof, to such person, to affirm, modify, amend, or cancel such emergency order.

11.9 Injunction

In accordance with § 62.1-44.15:37 and § 62.1-44.15:42 of the Code of Virginia, if a person who has been issued an order is not complying with the terms thereof, Campbell County, Department, and/or the Board many institute a proceeding in the Circuit Court of Campbell County.

11.10 Civil Penalties

In accordance with § 62.1-44.15:42 and § 62.1-44.15:48 of the Code of Virginia, any person who violates any provision of the Code of Virginia or of any regulation, ordinance, or standard and specification adopted or approved hereunder or who fails, neglects, or refuses to comply with any order of Campbell County, the Department, the Board, or a court, issued as herein provided, shall be subject to a civil penalty not to exceed $32,500 for each violation within the discretion of the court. Each day of violation of each requirement shall constitute a separate offense.

11.11 Payment of Civil Penalties

Pursuant to § 62.1-44.15:48 A of the Code of Virginia, civil penalties recovered by a locality's VSMP Authority shall be paid into the Campbell County's Treasury in which the violation occurred and are to be used for the purpose of minimizing, preventing, managing, or mitigating pollution of the waters of the locality and abating environmental pollution therein in such manner as the court may, by order, direct.

APPENDIX A

Virginia Stormwater Management Act
(§62.1-44.15:24 et seq)

APPENDIX B

Virginia Stormwater Management Program Regulations (9VAC25-870)

APPENDIX C

Campbell County Stormwater Ordinance

APPENDIX D

VSMP Project Process Plan

VSMP Project Process Plan

		Applicant's Responsibilities	Authority's Responsibilities	Notes:
Step 1: ***Application for Local VSMP Permit & General Permit for Discharges of Stormwater from Construction Activities Registration Statement (General Permit)***				
A	**General Permit Application**	Complete the registration statement for the General Permit and provide to Campbell County with initial VSMP permit application package - refer to step 1C below.	Confirm the registration statement for the General Permit is complete and accurate, and enter the information into the DEQ system prior to issuance of the Completeness Review Form.	A copy of the Registration Statement is provided in Appendix F.
B	**VSMP Fee Payment**	Provide 50% payment for the Department and Local Authority portion of the General Permit fee commensurate with the construction activity / land clearing proposed to Campbell County.	Confirm the VSMP fee provided is commensurate with the construction acitivty / land clearing proposed. Provide applicant with receipt acknowledging payment of the VSMP Fee.	The VSMP fee schedule is provided in the Stormwater Management Ordinance.
C	**Local Authority VSMP Permit Application Package**	Submit required documentation and application checklist at the initial submittal including certification by a Licensed Professional. <u>Required documentation includes the following</u>: ● Complete General Permit Registration Statement and payment of VSMP Permit Fee ● Certified and completed ESC & SWM Application Form and Checklist (Appendix G) ● ESC Plans, Details, Notes, etc. ● SWM Design Documents (Plans, Profiles, Details, Notes, etc.) ● SWPPP including ESC Report, Pollution Prevention Plan, and SWM narrative and calculations (Refer to Appendix I for template.) ● BMP Maintenance Agreement (may be submitted at a later date but prior to plan approval) ● ESC & SWM Bond Estimate (may be submitted at a later date but prior to permit approval) ● Other Local Requirements	Release Completeness Review Form after confirmation that the checklist is completed and certified. Forward via email and/or USPS Mail the completeness review form to the Applicant and Owner within 15 calendar days of the initial submittal of all required documents.	The Completeness Review Form (Appendix H) is not an approval letter for the information submitted; rather an acknowledgement that all required documents were provided for review. Applicant is responsible for all other permits including any local land disturbance permits, erosion & sediment control approval, and other applicable permits.
D	**Incomplete Submittal**	If the Authority provides notification of an incomplete submission, the Applicant will be required to submit the required information.	When the required information is submitted to the Authority, the Authority will then have 15 calendar days from the date of resubmission to provide the completeness review.	

		Applicant's Responsibilities	Authority's Responsibilities	Notes:
Step 2: *Local Review and Approval*				
A	**Review**		Review plans to ensure accordance with local and state Stormwater Requirements and approve or provide written comments explaining disapproval (within 60 calendar days from initial submittal).	The Authority will commence review of the application following submittal of all required information by the Applicant. If the submittal is deficient, the review timeframe will not begin until all required information is submitted by the Applicant.
B	**Subsequent Reviews**	If initial plan submittal is disapproved, address reviewer comments and re-submit with a letter including reviewer comments and responses.	Review and approve submittal or provide additional comments on submitted plan (within 45 calendar days from applicant re-submittal)	The Authority may require an additional fee for review of additional submittals exceeding three (3) reviews by the Authority prior to issuance of the final approval letter. This fee will be assessed as per the hourly rate of the reviewing agency to a maximum of $1,000.
C	**Long Term Stormwater Facility Maintenance Agreement**	Complete the maintenance agreement and submit to the Authority for review prior to plan approval and issuance of the VSMP permit. The Applicant must revise and resubmit the maintenance agreement, as requested in writing by the Authority.	Review and approve the maintenance agreement prior to plan approval and issuance of the VSMP permit and prior to confirming plan approval with DEQ for the registration statement for the General Permit. If the maintenance agreement is found to be incomplete and/or deficient, provide notification in writing to the Applicant outlining the deficiencies.	A long-term stormwater facility maintenance agreement may not be applicable for individual projects included as part of a common plan of development with a separate long-term stormwater facility maintenance agreement. A Long-Term Stormwater Facility Maintenance Agreement is provided in Appendix K.
D	**ESC & SWM Bonds**	Complete and submit the bond estimate to the Authority for review prior to issuance of the VSMP permit. The Applicant must revise and resubmit the bond estimate, as requested in writing by the Authority.	Review and approve the bond estimate prior to issuance of the VSMP permit. Confirm all ESC and SWM items are covered in the bond. If the bond estimate is found to be incomplete, provide notification in writing to the Applicant outlining the deficiencies in the bond estimate.	An Erosion and Sediment Control and Stormwater Management Facility (BMP) Bond Calculator is provided in Appendix M.
E	**Approval & Issuance of VSMP Permit**	1) Provide the final 50% payment via check to the Authority for the VSMP permit fee designated amount commensurate with the construction activity / land clearing proposed. 2) Provide a copy of the permit to the contractor to include in the SWPPP.	Upon approval of the elements required for the project's SWPPP, issue a local VSMP permit to the Owner, copy the Applicant, and confirm the plans are approved with DEQ for completion and issuance of the registration statement for the General Permit.	

		Applicant's Responsibilities	Authority's Responsibilities	Notes:
Step 3: *Construction Inspections*				
A	**Inspections**	Provide access to the Authority for inspection of the construction site.	Complete inspections of the land-disturbing activity during construction for compliance with the approved stormwater plan, including implementation of any additional control measures necessary to address a local TMDL. The Construction Inspection Form shall be completed and provided to the Applicant noting any deficiencies and schedule to complete modifications for compliance.	A VSMP & SWPPP Construction Inspection Form is provided in Appendix N. Complete an inspection within 24 hours of a major rainfall event.
B	**SWPPP Updates**	Update the SWPPP as required during construction (refer to 9VAC25-880-70 - the VSMP General Permit for Discharges of Stormwater from Construction Activities.	Confirm SWPPP is updated as part of inspection.	
C	**Enforcement**		If violations noted in inspection reports are not corrected, follow the enforcement process as established in Section 11.0 of the Administrative Guidance Manual.	

		Applicant's Responsibilities	Authority's Responsibilities	Notes:
Step 4: *Construction Closeout Documentation*				
A	**SWM Facility Construction Record Report**	Complete a construction record drawing for all permanent stormwater management facilities constructed as part of the project. The record drawing must include all the information listed in the Construction Record Drawing Checklist for Permanent Stormwater Management Facilities.	Review construction record drawings for all permanent stormwater management facilities constructed as part of the project for compliance with the Construction Record Drawing Checklist for Permanent Stormwater Management Facilities.	The Construction Record Drawing Checklist for Permanent Stormwater Management Facilities is provided in Appendix O.
B	**Project Completion Form**	Complete the Project Completion Form and submit to the Authority for review and approval. The Applicant must have an approved construction record drawing for all permanent stormwater management facilities constructed as part of the project.	Complete a final inspection to confirm the site meets the requirements of the Project Completion Form. If the site is deemed to meet the requirements of the Project Completion Form, sign the form and return to the Applicant.	A Project Completion Form Template is provided in Appendix P.
C	**Release of ESC & SWM Bonds**	Complete the Project Completion Form and submit to the Authority for review and approval. The Applicant must have an approved construction record drawing for all permanent stormwater management facilities constructed as part of the project.	Once the site meets the requirements of the Project Completion form and the construction record drawing for permanent stormwater management facilities has been approved, the Authority can release the Erosion and Sediment Control and Stormwater Management Bonds / Letters of Credit and initiate permit termination.	
Step 5: *Post-Construction Inspections*				
A	**Post-Construction Inspections**	Provide inspections and reports for all stormwater management BMPs within classification 2, 3, and 4, as required by the long-term stormwater facility maintenance agreement, to the Authority at the frequency noted in Table 9.1 in the Administrative Guidance Manual.	Confirm all required stormwater management facilities (BMPs) have a long-term stormwater facility maintenance agreement.	
			Send reminders to the Owner to complete an inspection and provide a report, as per the frequency noted in Table 9.1 in the Administrative Guidance Manual.	
			Complete inspections and reports every 5 years for all facilities that are in BMP classification 1 (refer to Table 9.1 in the Administrative Guidance Manual).	Refer to Appendix Q for Post-Construction Inspection forms.

APPENDIX E

General Permit for Discharges of Stormwater from Construction Activities

CHAPTER 880
GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES

9VAC25-880-1. Definitions.

The words and terms used in this chapter shall have the meanings defined in the Virginia Stormwater Management Act (Article 2.3 (§ 62.1-44.15:24 et seq.) of Chapter 3.1 of Title 62.1 of the Code of Virginia), this chapter, and 9VAC25-870 unless the context clearly indicates otherwise, except as otherwise specified in this section. Terms not defined in the Act, this chapter, or 9VAC25-870 shall have the meaning attributed to them in the federal Clean Water Act (33 USC § 1251 et seq.) (CWA). For the purposes of this chapter:

"Business day" means Monday through Friday excluding state holidays.

"Commencement of land disturbance" means the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities (e.g., stockpiling of fill material).

"Construction site" means the land where any land-disturbing activity is physically located or conducted, including any adjacent land used or preserved in connection with the land-disturbing activity.

"Final stabilization" means that one of the following situations has occurred:

1. All soil disturbing activities at the site have been completed and a permanent vegetative cover has been established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform (e.g., evenly distributed), mature enough to survive, and will inhibit erosion.

2. For individual lots in residential construction, final stabilization can occur by either:

a. The homebuilder completing final stabilization as specified in subdivision 1 of this definition; or

b. The homebuilder establishing temporary soil stabilization, including perimeter controls for an individual lot prior to occupation of the home by the homeowner, and informing the homeowner of the need for, and benefits of, final stabilization.

3. For construction projects on land used for agricultural purposes , final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface waters, and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization criteria specified in subdivision 1 or 2 of this definition.

"Immediately" means as soon as practicable, but no later than the end of the next business day, following the day when the land-disturbing activities have temporarily or permanently ceased. In the context of this general permit, "immediately" is used to define the deadline for initiating stabilization measures.

"Impaired waters" means surface waters identified as impaired on the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report.

"Infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices.

"Initiation of stabilization activities" means:

1. Prepping the soil for vegetative or nonvegetative stabilization;

2. Applying mulch or other nonvegetative product to the exposed area;

3. Seeding or planting the exposed area;

4. Starting any of the above activities on a portion of the area to be stabilized, but not on the entire area; or

5. Finalizing arrangements to have the stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

This list is not exhaustive.

"Measurable storm event" means a rainfall event producing 0.25 inches of rain or greater over 24 hours.

"Stabilized" means land that has been treated to withstand normal exposure to natural forces without incurring erosion damage.

9VAC25-880-10. Purpose.

This general permit regulation governs stormwater discharges from regulated construction activities. For the purposes of this chapter, these discharges are defined as stormwater discharges associated with large construction activity, and stormwater discharges associated with small construction activity. Stormwater discharges associated with other types of industrial activity shall not have coverage under this general permit. This general permit covers only discharges through a point source to surface waters or through a municipal or nonmunicipal separate storm sewer system to surface waters. Stormwater discharges associated with industrial activity that originate from construction activities that have been completed and the site has undergone final stabilization are not authorized by this general permit.

9VAC25-880-15. Applicability of incorporated references based on the dates that they became effective.

Except as noted, when a regulation of the United States set forth in the Code of Federal Regulations is referenced and incorporated herein, that regulation shall be as it exists and has been published in the July 1, 2013, update.

9VAC25-880-20. Effective date of general permit.

This general permit is effective on July 1, 2014. The general permit will expire on June 30, 2019. This general permit is effective for any covered operator upon compliance with all provisions of 9VAC25-880-30.

9VAC25-880-30. Authorization to discharge.

A. Any operator governed by this general permit is authorized to discharge to surface waters of the Commonwealth of Virginia provided that:

1. The operator submits a complete and accurate registration statement, if required to do so, in accordance with 9VAC25-880-50 and receives acceptance of the registration by the board;

2. The operator submits any permit fees, if required to do so, in accordance with 9VAC25-870-700 et seq.;

3. The operator complies with the applicable requirements of 9VAC25-880-70;

4. The operator obtains approval of:

a. An erosion and sediment control plan from the appropriate VESCP authority as authorized under the Erosion and Sediment Control Regulations (9VAC25-840), unless the operator receives from the VESCP an "agreement in lieu of a plan" as defined in 9VAC25-840-10 or prepares the erosion and sediment control plan in accordance with annual standards and specifications approved by the department. The operator of any land-disturbing activity that is not required to obtain erosion and sediment control plan approval from a VESCP authority or is not required to adopt department-approved annual standards and specifications shall submit the erosion and sediment control plan to the department for review and approval; and

b. A stormwater management plan from the appropriate VSMP authority as authorized under the Virginia Stormwater Management Program (VSMP) Regulation (9VAC25-870), unless the operator prepares the stormwater management plan in accordance with annual standards and specifications approved by the department. The operator of any land-disturbing activity that is not required to obtain stormwater management plan approval from a VSMP authority or is not required to adopt department-approved annual standards and specifications shall submit the stormwater management plan to the department for review and approval; and

5. The board has not notified the operator that the discharge is not eligible for coverage in accordance with subsection B of this section.

B. The board will notify an operator that the discharge is not eligible for coverage under this general permit in the event of any of the following:

1. The operator is required to obtain an individual permit in accordance with 9VAC25-870-410 B;

2. The operator is proposing discharges to surface waters specifically named in other board regulations that prohibit such discharges;

3. The discharge causes, may reasonably be expected to cause, or contributes to a violation of water quality standards (9VAC25-260);

4. The discharge violates or would violate the antidegradation policy in the Water Quality Standards (9VAC25-260-30) ; or

5. The discharge is not consistent with the assumptions and requirements of an applicable TMDL approved prior to the term of this general permit.

C. This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that:

1. The support activity is directly related to a construction activity that is required to have general permit coverage for discharges of stormwater from construction activities;

2. The support activity is not a commercial operation , nor does it serve multiple unrelated construction activities by different operators;

3. The support activity does not operate beyond the completion of the last construction activity it supports;

4. The support activity is identified in the registration statement at the time of general permit coverage;

5. Appropriate control measures are identified in a stormwater pollution prevention plan and implemented to address the discharges from the support activity areas; and

6. All applicable, state, federal, and local approvals are obtained for the support activity.

D. Support activities located off-site are not required to be covered under this general permit. Discharges of stormwater from off-site support activities may be authorized under

another state or VPDES permit. Where stormwater discharges from off-site support activities are not authorized under this general permit, the land area of the off-site support activity need not be included in determining the total land disturbance acreage of the construction activity seeking general permit coverage.

E. Discharges authorized by this general permit may be commingled with other sources of stormwater that are not required to be covered under a state permit, so long as the commingled discharge is in compliance with this general permit. Discharges authorized by a separate state or VPDES permit may be commingled with discharges authorized by this general permit so long as all such discharges comply with all applicable state and VPDES permit requirements.

F. Authorized nonstormwater discharges. The following nonstormwater discharges from construction activities are authorized by this general permit:

1. Discharges from firefighting activities;

2. Fire hydrant flushings;

3. Water used to wash vehicles or equipment where soaps, solvents, or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;

4. Water used to control dust that has been filtered, settled, or similarly treated prior to discharge;

5. Potable water source, including uncontaminated waterline flushings;

6. Routine external building wash down where soaps, solvents, or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;

7. Pavement wash water where spills or leaks of toxic or hazardous materials have not occurred (or where all spilled or leaked material has been removed prior to washing); where soaps, solvents, or detergents have not been used; and where the wash water has been filtered, settled, or similarly treated prior to discharge;

8. Uncontaminated air conditioning or compressor condensate;

9. Uncontaminated groundwater or spring water;

10. Foundation or footing drains where flows are not contaminated with process materials such as solvents;

11. Uncontaminated, excavation dewatering, including dewatering of trenches and excavations that have been filtered, settled, or similarly treated prior to discharge; and

12. Landscape irrigations.

G. Approval for coverage under this general permit does not relieve any operator of the responsibility to comply with any other applicable federal, state or local statute, ordinance or regulation.

H. Continuation of general permit coverage.

1. Any operator that was authorized to discharge under the general permit issued in 2009 and that submits a complete and accurate registration statement on or before June 30, 2014, is authorized to continue to discharge under the terms of the 2009 general permit until such time as the board either:

a. Issues coverage to the operator under this general permit or

b. Notifies the operator that the discharge is not eligible for coverage under this general permit.

2. When the operator is not in compliance with the conditions of the expiring or expired general permit the board may choose to do any or all of the following:

a. Initiate enforcement action based upon the 2009 general permit;

b. Issue a notice of intent to deny the new general permit. If the general permit is denied, the owner or operator would then be required to cease the activities authorized by the continued general permit or be subject to enforcement action for operating without a state permit;

c. Issue a new state permit with appropriate conditions; or

d. Take other actions authorized by the VSMP Regulation (9VAC25-870).

9VAC25-880-40. Delegation of authorities to state and local programs.

A board-approved VSMP authority is authorized to administer requirements of this general permit, including but not limited to: (i) registration statement acceptance; (ii) fee collection; (iii) stormwater management plan review and approval; and (iv) permit compliance and enforcement dependent upon conditions established as part of the board approval.

9VAC25-880-50. General permit application (registration statement).

A. Deadlines for submitting registration statement. Any operator seeking coverage under this general permit, and that is required to submit a registration statement, shall submit a complete and accurate general VPDES permit registration statement in accordance with this section, which shall serve as a notice of intent for coverage under the general VPDES permit for discharges of stormwater from construction activities.

1. New construction activities.

a. Any operator proposing a new stormwater discharge from construction activities shall submit a complete and accurate registration statement to the VSMP authority prior to the commencement of land disturbance.

b. Any operator proposing a new stormwater discharge from construction activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment is authorized to discharge under this general permit, provided that:

(1) The operator submits a complete and accurate registration statement to the VSMP authority no later than 30 days after commencing land disturbance; and

(2) Documentation to substantiate the occurrence of the public emergency is provided with the registration statement.

c. Any operator proposing a new stormwater discharge associated with the construction of a single-family residence separately built, disturbing less than one acre and part of a larger common plan of development or sale, is authorized to discharge under this general permit and is not required to submit a registration statement or the department portion of the permit fee, provided that the stormwater management plan for the larger common plan of development or sale provides permanent control measures (i.e., stormwater management facilities) encompassing the single family residence.

2. Existing construction activities.

a. Any operator that was authorized to discharge under the general permit issued in 2009 and that intends to continue coverage under this general permit shall:

(1) Submit a complete and accurate registration statement to the VSMP authority on or before June 1, 2014; and

(2) Update its stormwater pollution prevention plan to comply with the requirements of this general permit no later than 60 days after the date of coverage under this general permit.

b. Any operator with an existing stormwater discharge associated with the construction of a single-family residence separately built, disturbing less than one acre and part of a larger common plan of development or sale, and that intends to continue coverage under this general permit, is authorized to discharge under this general permit and is not required to submit a registration statement or the department portion of the permit fee, provided that:

(1) The stormwater management plan for the larger common plan of development or sale provides permanent control measures (i.e., stormwater management facilities) encompassing the single-family residence; and

(2) The operator updates its stormwater pollution prevention plan to comply with the requirements of this general permit no later than 60 days after the date of coverage under this general permit.

3. For stormwater discharges from construction activities where the operator changes, the new operator must submit a complete and accurate registration statement or transfer agreement form to the VSMP authority prior to assuming operational control over site specifications or commencing work on-site.

4. Late notifications. Operators are not prohibited from submitting registration statements after commencing land disturbance. When a late registration statement is submitted, authorization for discharges shall not occur until coverage under the general permit is issued. The VSMP authority, department, board, and the EPA reserve the right to take enforcement action for any unpermitted discharges that occur between the commencement of land disturbance and discharge authorization.

B. Registration statement. The operator shall submit a registration statement to the VSMP authority that shall contain the following information:

1. Name, contact, mailing address, telephone number, and email address if available of the construction activity operator. No more than one operator may receive coverage under each registration statement.

NOTE: General permit coverage will be issued to this operator, and the certification in subdivision 11 of this subsection must be signed by the appropriate person associated with this operator;

2. Name and location if available of the construction activity and all off-site support activities to be covered under this general permit, including city or county, and latitude and longitude in decimal degrees;

3. Status of the construction activity: federal, state, public, or private;

4. Nature of the construction activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.);

5. Name of the receiving water(s) and HUC ;

6. If the discharge is through a municipal separate storm sewer system (MS4), the name of the municipal separate storm sewer system operator;

7. Estimated project start date and completion date;

8. Total land area of development and estimated area to be disturbed by the construction activity (to the nearest one-hundredth of an acre);

9. Whether the area to be disturbed by the construction activity is part of a larger common plan of development or sale;

10. A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Stormwater Discharges from Construction Activities prior to submitting the registration statement. By signing the registration statement the operator certifies that the SWPPP has been prepared ; and

11. The following certification: "I certify under penalty of law that I have read and understand this registration statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

C. The registration statement shall be signed in accordance with 9VAC25-880-70, Part III K.

9VAC25-880-60. Termination of general permit coverage.

A. Requirements. The operator of the construction activity shall submit a notice of termination to the VSMP authority after one or more of the following conditions have been met:

1. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;

2. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;

3. Coverage under an alternative VPDES or state permit has been obtained; or

4. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

The notice of termination should be submitted no later than 30 days after one of the above conditions being met. Authorization to discharge terminates at midnight on the date that the notice of termination is submitted for the conditions set forth in subdivisions 2 through 4 of this subsection unless otherwise notified by the VSMP authority or the department. Termination of authorizations to discharge for the conditions set forth in subdivision 1 of this subsection shall be effective upon notification from the department that the provisions of subdivision 1 of this subsection have been met or 60 days after submittal of the notice of terminations, whichever occurs first.

B. Notice of termination. The notice of termination shall contain the following information:

1. Name, contact, mailing address, telephone number, and email address if available of the construction activity operator.

2. Name and location if available of the construction activity covered under this general permit, including city or county, and latitude and longitude in decimal degrees.

3. The general permit registration number.

4. The basis for submission of the notice of termination, pursuant to subsection A of this section.

5. Where applicable, a list of the on-site and off-site permanent control measures (both structural and nonstructural) that were installed to comply with the stormwater

management technical criteria. For each permanent control measure that was installed, the following information shall be included:

a. The type of permanent control measure installed and the date that it became functional as a permanent control measure;

b. The location if available of the permanent control measure, including city or county, and latitude and longitude in decimal degrees;

c. The receiving water of the permanent control measures; and

d. The number of total and impervious acres treated by the permanent control measure (to the nearest one-tenth of an acre).

6. Where applicable, the following information related to participation in a regional stormwater management plan. For each regional stormwater management facility, the following information shall be included:

a. The type of regional facility to which the site contributes;

b. The location if available of the regional facility, including city or county, and latitude and longitude in decimal degrees; and

c. The number of total and impervious site acres treated by the regional facility (to the nearest one-tenth of an acre).

7. Where applicable, the following information related to perpetual nutrient credits that were acquired in accordance with § 62.1-44.15:35 of the Code of Virginia:

a. The name of the nonpoint nutrient credit generating entity from which perpetual nutrient credits were acquired; and

b. The number of perpetual nutrient credits acquired (lbs. per acre per year).

8. The following certification: "I certify under penalty of law that I have read and understand this notice of termination and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

C. The notice of termination shall be signed in accordance with 9VAC25-880-70 Part III K.

D. Termination by the board. The board may terminate coverage under this general permit during its term and require application for an individual permit or deny a general permit renewal application on its own initiative in accordance with the Act, this chapter, and the VSMP Regulation, 9VAC25-870.

9VAC25-880-70. General permit.

Any operator whose registration statement is accepted by the board will receive the following general permit and shall comply with the requirements contained therein and be subject to all requirements of 9VAC25-870.

General Permit No.: VAR10

Effective Date: July 1, 2014

Expiration Date: June 30, 2019

GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES

AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER MANAGEMENT PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT ACT

In compliance with the provisions of the Clean Water Act, as amended, and pursuant to the Virginia Stormwater Management Act and regulations adopted pursuant thereto, operators of construction activities are authorized to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those specifically named in State Water Control Board regulations that prohibit such discharges.

The authorized discharge shall be in accordance with this cover page, Part I - Discharge Authorization and Special Conditions, Part II - Stormwater Pollution Prevention Plan, and Part III - Conditions Applicable to All VPDES Permits as set forth herein.

PART I
DISCHARGE AUTHORIZATION AND SPECIAL CONDITIONS

A. Coverage under this general permit.

1. During the period beginning with the date of coverage under this general permit and lasting until the general permit's expiration date, the operator is authorized to discharge stormwater from construction activities.

2. This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that:

a. The support activity is directly related to the construction activity that is required to have general permit coverage for discharges of stormwater from construction activities;

b. The support activity is not a commercial operation, nor does it serve multiple unrelated construction activities by different operators ;

c. The support activity does not operate beyond the completion of the last construction activity it supports;

d. The support activity is identified in the registration statement at the time of general permit coverage;

e. Appropriate control measures are identified in a stormwater pollution prevention plan and implemented to address the discharges from the support activity areas; and

f. All applicable state, federal, and local approvals are obtained for the support activity.

B. Limitations on coverage.

1. Post-construction discharges. This general permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any support activity sites covered under the general permit

registration, has undergone final stabilization. Post-construction industrial stormwater discharges may need to be covered by a separate VPDES permit.

2. Discharges mixed with nonstormwater. This general permit does not authorize discharges that are mixed with sources of nonstormwater, other than those discharges that are identified in Part I E (Authorized nonstormwater discharges) and are in compliance with this general permit.

3. Discharges covered by another state permit. This general permit does not authorize discharges of stormwater from construction activities that have been covered under an individual permit or required to obtain coverage under an alternative general permit.

4. Impaired waters and TMDL limitation. Discharges of stormwater from construction activities to surface waters identified as impaired in the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report or for which a TMDL wasteload allocation has been established and approved prior to the term of this general permit for (i) sediment or a sediment-related parameter (i.e., total suspended solids or turbidity) or (ii) nutrients (i.e., nitrogen or phosphorus) are not eligible for coverage under this general permit unless the operator develops, implements, and maintains a SWPPP that minimizes the pollutants of concern and, when applicable, is consistent with the assumptions and requirements of the approved TMDL wasteload allocations. In addition, the operator shall implement the following items:

a. The impaired water(s), approved TMDL(s), and pollutant(s) of concern, when applicable, shall be identified in the SWPPP;

b. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;

c. Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and

d. The applicable SWPPP inspection requirements specified in Part II F 2 shall be amended as follows:

(1) Inspections shall be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted on the next business day; and

(2) Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls discharging to surface waters identified as impaired or for which a TMDL wasteload allocation has been established and approved prior to the term of this general permit.

5. Exceptional waters limitation. Discharges of stormwater from construction activities not previously covered under the general permit issued in 2009 to exceptional waters identified in 9VAC25-260-30 A 3 c are not eligible for coverage under this general permit unless the operator implements the following:

a. The exceptional water(s) shall be identified in the SWPPP;

b. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;

c. Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and

d. The applicable SWPPP inspection requirements specified in Part II F 2 shall be amended as follows:

(1) Inspections shall be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted on the next business day; and

(2) Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls discharging to exceptional waters.

6. There shall be no discharge of floating solids or visible foam in other than trace amounts.

C. Commingled discharges. Discharges authorized by this general permit may be commingled with other sources of stormwater that are not required to be covered under a state permit, so long as the commingled discharge is in compliance with this general permit. Discharges authorized by a separate state or VPDES permit may be commingled with discharges authorized by this general permit so long as all such discharges comply with all applicable state and VPDES permit requirements.

D. Prohibition of nonstormwater discharges. Except as provided in Parts I A 2, I C and I E, all discharges covered by this general permit shall be composed entirely of stormwater associated with construction activities. All other discharges including the following are prohibited:

1. Wastewater from washout of concrete;

2. Wastewater from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;

3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;

4. Oils, toxic substances, or hazardous substances from spills or other releases; and

5. Soaps, solvents , or detergents used in equipment and vehicle washing.

E. Authorized nonstormwater discharges. The following nonstormwater discharges from construction activities are authorized by this general permit when discharged in compliance with this general permit:

1. Discharges from firefighting activities;

2. Fire hydrant flushings;

3. Waters used to wash vehicles or equipment where soaps, solvents, or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;

4. Water used to control dust that has been filtered, settled, or similarly treated prior to discharge;

5. Potable water sources, including uncontaminated waterline flushings;

6. Routine external building wash down where soaps, solvents or detergents have not been used and the wash water has been filtered, settled, or similarly treated prior to discharge;

7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (or where all spilled or leaked material has been removed prior to

washing); where soaps, solvents, or detergents have not been used ; and where the wash water has been filtered, settled, or similarly treated prior to discharge;

8. Uncontaminated air conditioning or compressor condensate;

9. Uncontaminated ground water or spring water;

10. Foundation or footing drains where flows are not contaminated with process materials such as solvents;

11. Uncontaminated excavation dewatering, including dewatering of trenches and excavations that have been filtered, settled, or similarly treated prior to discharge; and

12. Landscape irrigation.

F. Termination of general permit coverage.

1. The operator of the construction activity shall submit a notice of termination in accordance with 9VAC25-880-60 to the VSMP authority after one or more of the following conditions have been met:

a. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long term responsibility and maintenance requirements shall be recorded in the local land records prior to the submission of a notice of termination;

b. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;

c. Coverage under an alternative VPDES or state permit has been obtained; or

d. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

2. The notice of termination should be submitted no later than 30 days after one of the above conditions in subdivision 1 of this subsection are met. Authorization to discharge terminates at midnight on the date that the notice of termination is submitted for the conditions set forth in subdivisions 1 b through 1 d of this subsection. Termination of authorizations to discharge for the conditions set forth in subdivision 1 a of this subsection shall be effective upon notification from the department that the provisions of subdivision 1 a of this subsection have been met or 60 days after submittal of the notice of termination, whichever occurs first.

3. The notice of termination shall be signed in accordance with Part III K of this general permit.

G. Water quality protection.

1. The operator must select, install, implement and maintain control measures as identified in the SWPPP at the construction site that minimize pollutants in the discharge as necessary to ensure that the operator's discharge does not cause or contribute to an excursion above any applicable water quality standard.

2. If it is determined by the department that the operator's discharges are causing, have reasonable potential to cause, or are contributing to an excursion above any applicable water quality standard, the department, in consultation with the VSMP authority, may take appropriate enforcement action and require the operator to:

a. Modify or implement additional control measures in accordance with Part II B to adequately address the identified water quality concerns;

b. Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or

c. Submit an individual permit application in accordance with 9VAC25-870-410 B 3.

All written responses required under this chapter must include a signed certification consistent with Part III K.

PART II
STORMWATER POLLUTION PREVENTION PLAN

A stormwater pollution prevention plan (SWPPP) shall be developed prior to the submission of a registration statement and implemented for the construction activity, including any support activity, covered by this general permit. SWPPPs shall be prepared in accordance with good engineering practices. Construction activities that are part of a larger common plan of development or sale and disturb less than one acre may utilize a SWPPP template provided by the department and need not provide a separate stormwater management plan if one has been prepared and implemented for the larger common plan of development or sale.

The SWPPP requirements of this general permit may be fulfilled by incorporating by reference other plans such as a spill prevention control and countermeasure (SPCC) plan developed for the site under § 311 of the federal Clean Water Act or best management practices (BMP) programs otherwise required for the facility provided that the incorporated plan meets or exceeds the SWPPP requirements of Part II A. All plans incorporated by reference into the SWPPP become enforceable under this general permit. If a plan incorporated by reference does not contain all of the required elements of the SWPPP, the operator must develop the missing elements and include them in the SWPPP.

Any operator that was authorized to discharge under the general permit issued in 2009, and that intends to continue coverage under this general permit, shall update its stormwater pollution prevention plan to comply with the requirements of this general permit no later than 60 days after the date of coverage under this general permit.

A. Stormwater pollution prevention plan contents. The SWPPP shall include the following items:

1. General information.

a. A signed copy of the registration statement for coverage under the general VPDES permit for discharges of stormwater from construction activities;

b. Upon receipt, a copy of the notice of coverage under the general VPDES permit for discharges of stormwater from construction activities (i.e., notice of coverage letter);

c. Upon receipt, a copy of the general VPDES permit for discharges of stormwater from construction activities;

d. A narrative description of the nature of the construction activity, including the function of the project (e.g., low density residential, shopping mall, highway, etc.);

e. A legible site plan identifying:

(1) Directions of stormwater flow and approximate slopes anticipated after major grading activities;

(2) Limits of land disturbance including steep slopes and natural buffers around surface waters that will not be disturbed;

(3) Locations of major structural and nonstructural control measures, including sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to filter, settle, or similarly treat sediment, that will be installed between disturbed areas and the undisturbed vegetated areas in order to increase sediment removal and maximize stormwater infiltration;

(4) Locations of surface waters;

(5) Locations where concentrated stormwater is discharged;

(6) Locations of support activities, when applicable and when required by the VSMP authority, including but not limited to (i) areas where equipment and vehicle washing, wheel wash water, and other wash water is to occur; (ii) storage areas for chemicals such as acids, fuels, fertilizers, and other lawn care chemicals; (iii) concrete wash out areas; (iv) vehicle fueling and maintenance areas; (v) sanitary waste facilities, including those temporarily placed on the construction site; and (vi) construction waste storage; and

(7) When applicable, the location of the on-site rain gauge or the methodology established in consultation with the VSMP authority used to identify measurable storm events for inspection purposes.

2. Erosion and sediment control plan.

a. An erosion and sediment control plan approved by the VESCP authority as authorized under the Erosion and Sediment Control Regulations (9VAC25-840), an "agreement in lieu of a plan" as defined in 9VAC25-840-10 from the VESCP authority, or an erosion and sediment control plan prepared in accordance with annual standards and specifications approved by the department. Any operator proposing a new stormwater discharge from construction activities that is not required to obtain erosion and sediment control plan approval from a VESCP authority or does not adopt department-approved annual standards and specifications shall submit the erosion and sediment control plan to the department for review and approval.

b. All erosion and sediment control plans shall include a statement describing the maintenance responsibilities required for the erosion and sediment controls used.

c. A properly implemented approved erosion and sediment control plan, "agreement in lieu of a plan," or erosion and sediment control plan prepared in accordance with department-approved annual standards and specifications, that adequately:

(1) Controls the volume and velocity of stormwater runoff within the site to minimize soil erosion;

(2) Controls stormwater discharges, including peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;

(3) Minimizes the amount of soil exposed during the construction activity;

(4) Minimizes the disturbance of steep slopes;

(5) Minimizes sediment discharges from the site in a manner that addresses (i) the amount, frequency, intensity, and duration of precipitation; (ii) the nature of resulting stormwater runoff; and (iii) soil characteristics, including the range of soil particle sizes present on the site;

(6) Provides and maintains natural buffers around surface waters, directs stormwater to vegetated areas to increase sediment removal, and maximizes stormwater infiltration, unless infeasible;

(7) Minimizes soil compaction and, unless infeasible, preserves topsoil;

(8) Ensures that stabilization of disturbed areas will be initiated immediately whenever any clearing, grading, excavating, or other land-disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 days; and

(9) Utilizes outlet structures that withdraw stormwater from the surface (i.e., above the permanent pool or wet storage water surface elevation), unless infeasible, when discharging from sediment basins or sediment traps.

3. Stormwater management plan.

a. New construction activities. A stormwater management plan approved by the VSMP authority as authorized under the Virginia Stormwater Management Program (VSMP) Regulation (9VAC25-870), or a stormwater management plan prepared in accordance with annual standards and specifications approved by the department. Any operator proposing a new stormwater discharge from construction activities that is not required to obtain stormwater management plan approval from a VSMP authority or does not adopt department-approved annual standards and specifications shall submit the stormwater management plan to the department for review and approval.

b. Existing construction activities. Any operator that was authorized to discharge under the general permit issued in 2009, and that intends to continue coverage under this general permit, shall ensure compliance with the requirements of 9VAC25-870-93 through 9VAC25-870-99 of the VSMP Regulation, including but not limited to the water quality and quantity requirements. The SWPPP shall include a description of, and all necessary calculations supporting, all post-construction stormwater management measures that will be installed prior to the completion of the construction process to control pollutants in stormwater discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree possible. Such measures must be designed and installed in accordance with applicable VESCP authority, VSMP authority, state, and federal requirements, and any necessary permits must be obtained.

4. Pollution prevention plan. A pollution prevention plan that addresses potential pollutant-generating activities that may reasonably be expected to affect the quality of stormwater discharges from the construction activity, including any support activity. The pollution prevention plan shall:

a. Identify the potential pollutant-generating activities and the pollutant that is expected to be exposed to stormwater;

b. Describe the location where the potential pollutant-generating activities will occur, or if identified on the site plan, reference the site plan;

c. Identify all nonstormwater discharges, as authorized in Part I E of this general permit, that are or will be commingled with stormwater discharges from the construction activity, including any applicable support activity;

d. Identify the person responsible for implementing the pollution prevention practice or practices for each pollutant-generating activity (if other than the person listed as the qualified personnel);

e. Describe the pollution prevention practices and procedures that will be implemented to:

(1) Prevent and respond to leaks, spills, and other releases including (i) procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other

releases; and (ii) procedures for reporting leaks, spills, and other releases in accordance with Part III G;

(2) Prevent the discharge of spilled and leaked fuels and chemicals from vehicle fueling and maintenance activities (e.g., providing secondary containment such as spill berms, decks, spill containment pallets, providing cover where appropriate, and having spill kits readily available);

(3) Prevent the discharge of soaps, solvents, detergents, and wash water from construction materials, including the clean-up of stucco, paint, form release oils, and curing compounds (e.g., providing (i) cover (e.g., plastic sheeting or temporary roofs) to prevent contact with stormwater; (ii) collection and proper disposal in a manner to prevent contact with stormwater; and (iii) a similarly effective means designed to prevent discharge of these pollutants);

(4) Minimize the discharge of pollutants from vehicle and equipment washing, wheel wash water, and other types of washing (e.g., locating activities away from surface waters and stormwater inlets or conveyance and directing wash waters to sediment basins or traps, using filtration devices such as filter bags or sand filters, or using similarly effective controls);

(5) Direct concrete wash water into a leak-proof container or leak-proof settling basin. The container or basin shall be designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes. Liquid concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wash waters and shall not be discharged to surface waters;

(6) Minimize the discharge of pollutants from storage, handling, and disposal of construction products, materials, and wastes including (i) building products such as asphalt sealants, copper flashing, roofing materials, adhesives, and concrete admixtures; (ii) pesticides, herbicides, insecticides, fertilizers, and landscape materials; and (iii) construction and domestic wastes such as packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials;

(7) Prevent the discharge of fuels, oils, and other petroleum products, hazardous or toxic wastes, and sanitary wastes; and

(8) Address any other discharge from the potential pollutant-generating activities not addressed above; and

f. Describe procedures for providing pollution prevention awareness of all applicable wastes, including any wash water, disposal practices, and applicable disposal locations of such wastes, to personnel in order to comply with the conditions of this general permit. The operator shall implement the procedures described in the SWPPP.

5. SWPPP requirements for discharges to impaired waters, surface waters with an applicable TMDL wasteload allocation established and approved prior to the term of this general permit, and exceptional waters. The SWPPP shall:

a. Identify the impaired water(s), approved TMDL(s), pollutant(s) of concern, and exceptional waters identified in 9VAC25-260-30 A 3 c, when applicable;

b. Provide clear direction that:

(1) Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;

(2) Nutrients shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events; and

(3) A modified inspection schedule shall be implemented in accordance with Part I B 4 or Part I B 5.

6. Qualified personnel. The name, phone number, and qualifications of the qualified personnel conducting inspections required by this general permit.

7. Delegation of authority. The individuals or positions with delegated authority, in accordance with Part III K, to sign inspection reports or modify the SWPPP.

8. SWPPP signature. The SWPPP shall be signed and dated in accordance with Part III K.

B. SWPPP amendments, modification, and updates.

1. The operator shall amend the SWPPP whenever there is a change in the design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to surface waters and that has not been previously addressed in the SWPPP.

2. The SWPPP must be amended if, during inspections or investigations by the operator's qualified personnel, or by local, state, or federal officials, it is determined that the existing control measures are ineffective in minimizing pollutants in discharges from the construction activity. Revisions to the SWPPP shall include additional or modified control measures designed and implemented to correct problems identified. If approval by the VESCP authority, VSMP authority, or department is necessary for the control measure, revisions to the SWPPP shall be completed no later than seven calendar days following approval. Implementation of these additional or modified control measures must be accomplished as described in Part II G.

3. The SWPPP must clearly identify the contractor(s) that will implement and maintain each control measure identified in the SWPPP. The SWPPP shall be amended to identify any new contractor that will implement and maintain a control measure.

4. The operator shall update the SWPPP no later than seven days following any modification to its implementation. All modifications or updates to the SWPPP shall be noted and shall include the following items:

a. A record of dates when:

(1) Major grading activities occur;

(2) Construction activities temporarily or permanently cease on a portion of the site; and

(3) Stabilization measures are initiated;

b. Documentation of replaced or modified controls where periodic inspections or other information have indicated that the controls have been used inappropriately or incorrectly and where modified as soon as possible;

c. Areas that have reached final stabilization and where no further SWPPP or inspection requirements apply;

d. All properties that are no longer under the legal control of the operator and the dates on which the operator no longer had legal control over each property;

e. The date of any prohibited discharges, the discharge volume released, and what actions were taken to minimize the impact of the release;

f. Measures taken to prevent the reoccurrence of any prohibited discharge; and

g. Measures taken to address any evidence identified as a result of an inspection required under Part II F.

5. Amendments, modifications, or updates to the SWPPP shall be signed in accordance with Part III K.

C. Public Notification. Upon commencement of land disturbance, the operator shall post conspicuously a copy of the notice of coverage letter near the main entrance of the construction activity. For linear projects, the operator shall post the notice of coverage letter at a publicly accessible location near an active part of the construction project (e.g., where a pipeline crosses a public road). The operator shall maintain the posted information until termination of general permit coverage as specified in Part I F.

D. SWPPP availability.

1. Operators with day-to-day operational control over SWPPP implementation shall have a copy of the SWPPP available at a central location on-site for use by those identified as having responsibilities under the SWPPP whenever they are on the construction site.

2. The operator shall make the SWPPP and all amendments, modifications, and updates available upon request to the department, the VSMP authority, the EPA, the VESCP authority, local government officials, or the operator of a municipal separate storm sewer system receiving discharges from the construction activity. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the SWPPP's location must be posted near the main entrance of the construction site.

3. The operator shall make the SWPPP available for public review in an electronic format or in hard copy. Information for public access to the SWPPP shall be posted and maintained in accordance with Part II C. If not provided electronically, public access to the SWPPP may be arranged upon request at a time and at a publicly accessible location convenient to the operator or his designee but shall be no less than once per month and shall be during normal business hours. Information not required to be contained within the SWPPP by this general permit is not required to be released.

E. SWPPP implementation. The operator shall implement the SWPPP and subsequent amendments, modifications, and updates from commencement of land disturbance until termination of general permit coverage as specified in Part I F.

1. All control measures must be properly maintained in effective operating condition in accordance with good engineering practices and, where applicable, manufacturer specifications. If a site inspection required by Part II F identifies a control measure that is not operating effectively, corrective action(s) shall be completed as soon as practicable, but no later than seven days after discovery or a longer period as established by the VSMP authority, to maintain the continued effectiveness of the control measures.

2. If site inspections required by Part II F identify an existing control measure that needs to be modified or if an additional control measure is necessary for any reason, implementation shall be completed prior to the next anticipated measurable storm event. If implementation prior to the next anticipated measurable storm event is impracticable, then alternative control measures shall be implemented as soon as practicable, but no later than seven days after discovery or a longer period as established by the VSMP authority.

F. SWPPP Inspections.

1. Personnel responsible for on-site and off-site inspections. Inspections required by this general permit shall be conducted by the qualified personnel identified by the operator in the SWPPP. The operator is responsible for insuring that the qualified personnel conduct the inspection.

2. Inspection schedule.

a. Inspections shall be conducted at a frequency of:

(1) At least once every five business days; or

(2) At least once every 10 business days and no later than 48 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 48 hours between business days, the inspection shall be conducted no later than the next business day.

b. Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator shall immediately resume the regular inspection frequency.

c. Representative inspections may be utilized for utility line installation, pipeline construction, or other similar linear construction activities provided that:

(1) Temporary or permanent soil stabilization has been installed and vehicle access may compromise the temporary or permanent soil stabilization and potentially cause additional land disturbance increasing the potential for erosion;

(2) Inspections occur on the same frequency as other construction activities;

(3) Control measures are inspected along the construction site 0.25 miles above and below each access point (i.e., where a roadway, undisturbed right-of-way, or other similar feature intersects the construction activity and access does not compromise temporary or permanent soil stabilization); and

(4) Inspection locations are provided in the report required by Part II F.

3. Inspection requirements.

a. As part of the inspection, the qualified personnel shall:

(1) Record the date and time of the inspection and when applicable the date and rainfall amount of the last measurable storm event;

(2) Record the information and a description of any discharges occurring at the time of the inspection;

(3) Record any land-disturbing activities that have occurred outside of the approved erosion and sediment control plan;

(4) Inspect the following for installation in accordance with the approved erosion and sediment control plan, identification of any maintenance needs, and evaluation of effectiveness in minimizing sediment discharge, including whether the control has been inappropriately or incorrectly used:

(a) All perimeter erosion and sediment controls, such as silt fence;

(b) Soil stockpiles, when applicable, and borrow areas for stabilization or sediment trapping measures;

(c) Completed earthen structures, such as dams, dikes, ditches, and diversions for stabilization;

(d) Cut and fill slopes;

(e) Sediment basins and traps, sediment barriers, and other measures installed to control sediment discharge from stormwater;

(f) Temporary or permanent channel, flume, or other slope drain structures installed to convey concentrated runoff down cut and fill slopes;

(g) Storm inlets that have been made operational to ensure that sediment laden stormwater does not enter without first being filtered or similarly treated; and

(h) Construction vehicle access routes that intersect or access paved roads for minimizing sediment tracking;

(5) Inspect areas that have reached final grade or that will remain dormant for more than 14 days for initiation of stabilization activities;

(6) Inspect areas that have reached final grade or that will remain dormant for more than 14 days for completion of stabilization activities within seven days of reaching grade or stopping work;

(7) Inspect for evidence that the approved erosion and sediment control plan, "agreement in lieu of a plan," or erosion and sediment control plan prepared in accordance with department-approved annual standards and specifications has not been properly implemented. This includes but is not limited to:

(a) Concentrated flows of stormwater in conveyances such as rills, rivulets or channels that have not been filtered, settled, or similarly treated prior to discharge , or evidence thereof;

(b) Sediment laden or turbid flows of stormwater that have not been filtered or settled to remove sediments prior to discharge;

(c) Sediment deposition in areas that drain to unprotected stormwater inlets or catch basins that discharge to surface waters. Inlets and catch basins with failing sediments controls due to improper installation, lack of maintenance, or inadequate design are considered unprotected;

(d) Sediment deposition on any property (including public and private streets) outside of the construction activity covered by this general permit;

(e) Required stabilization has not been initiated or completed on portions of the site;

(f) Sediment basins without adequate wet or dry storage volume or sediment basins that allow the discharge of stormwater from below the surface of the wet storage portion of the basin;

(g) Sediment traps without adequate wet or dry storage or sediment traps that allow the discharge of stormwater from below the surface of the wet storage portion of the trap; and

(h) Land disturbance outside of the approved area to be disturbed;

(8) Inspect pollutant generating activities identified in the pollution prevention plan for the proper implementation, maintenance and effectiveness of the procedures and practices;

(9) Identify any pollutant generating activities not identified in the pollution prevention plan; and

(10) Identify and document the presence of any evidence of the discharge of pollutants prohibited by this general permit.

4. Inspection report. Each inspection report shall include the following items:

a. The date and time of the inspection and when applicable, the date and rainfall amount of the last measurable storm event;

b. Summarized findings of the inspection;

c. The location(s) of prohibited discharges;

d. The location(s) of control measures that require maintenance;

e. The location(s) of control measures that failed to operate as designed or proved inadequate or inappropriate for a particular location;

f. The location(s) where any evidence identified under Part II F 3 a (7) exists;

g. The location(s) where any additional control measure is needed that did not exist at the time of inspection;

h. A list of corrective actions required (including any changes to the SWPPP that are necessary) as a result of the inspection or to maintain permit compliance;

i. Documentation of any corrective actions required from a previous inspection that have not been implemented; and

j. The date and signature of the qualified personnel and the operator or its duly authorized representative.

The inspection report and any actions taken in accordance with Part II must be retained by the operator as part of the SWPPP for at least three years from the date that general permit coverage expires or is terminated. The inspection report shall identify any incidents of noncompliance. Where an inspection report does not identify any incidents of noncompliance, the report shall contain a certification that the construction activity is in compliance with the SWPPP and this general permit. The report shall be signed in accordance with Part III K of this general permit.

G. Corrective actions.

1. The operator shall implement the corrective action(s) identified as a result of an inspection as soon as practicable but no later than seven days after discovery or a longer period as approved by the VSMP authority. If approval of a corrective action by a regulatory authority (e.g., VSMP authority, VESCP authority, or the department) is necessary, additional control measures shall be implemented to minimize pollutants in stormwater discharges until such approvals can be obtained.

2. The operator may be required to remove accumulated sediment deposits located outside of the construction activity covered by this general permit as soon as practicable in order to minimize environmental impacts. The operator shall notify the VSMP authority and the department as well as obtain all applicable federal, state, and local authorizations, approvals, and permits prior to the removal of sediments accumulated in surface waters including wetlands.

PART III
CONDITIONS APPLICABLE TO ALL VPDES PERMITS

NOTE: Discharge monitoring is not required for this general permit. If the operator chooses to monitor stormwater discharges or control measures, the operator must comply with the requirements of subsections A, B, and C, as appropriate.

A. Monitoring.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitoring activity.

2. Monitoring shall be conducted according to procedures approved under 40 CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this general permit. Analyses performed according to test procedures approved under 40 CFR Part 136 shall be performed by an environmental laboratory certified under regulations adopted by the Department of General Services (1VAC30-45 or 1VAC30-46).

3. The operator shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements.

B. Records.

1. Monitoring records and reports shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) and time(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

2. The operator shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this general permit, and records of all data used to complete the registration statement for this general permit, for a period of at least three years from the date of the sample, measurement, report or request for coverage. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the operator, or as requested by the board.

C. Reporting monitoring results.

1. The operator shall update the SWPPP to include the results of the monitoring as may be performed in accordance with this general permit, unless another reporting schedule is specified elsewhere in this general permit.

2. Monitoring results shall be reported on a discharge monitoring report (DMR); on forms provided, approved or specified by the department; or in any format provided that the date, location, parameter, method, and result of the monitoring activity are included.

3. If the operator monitors any pollutant specifically addressed by this general permit more frequently than required by this general permit using test procedures approved under 40 CFR Part 136 or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this general permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the department.

4. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this general permit.

D. Duty to provide information. The operator shall furnish, within a reasonable time, any information which the board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this general permit or to determine compliance with this general permit. The board, department, EPA, or VSMP authority may require the operator to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of surface waters, or such other information as may be necessary to accomplish the purposes of the CWA and the Virginia Stormwater Management Act. The operator shall also furnish to the board, department, EPA, or VSMP authority, upon request, copies of records required to be kept by this general permit.

E. Compliance schedule reports. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this general permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized stormwater discharges. Pursuant to § 62.1-44.5 of the Code of Virginia, except in compliance with a state permit issued by the department, it shall be unlawful to cause a stormwater discharge from a construction activity.

G. Reports of unauthorized discharges. Any operator who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302, or § 62.1-44.34:19 of the Code of Virginia that occurs during a 24-hour period into or upon surface waters or who discharges or causes or allows a discharge that may reasonably be expected to enter surface waters, shall notify the Department of Environmental Quality of the discharge immediately upon discovery of the discharge, but in no case later than within 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the department and the VSMP authority within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;

2. The cause of the discharge;

3. The date on which the discharge occurred;

4. The length of time that the discharge continued;

5. The volume of the discharge;

6. If the discharge is continuing, how long it is expected to continue;

7. If the discharge is continuing, what the expected total volume of the discharge will be; and

8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this general permit.

Discharges reportable to the department and the VSMP authority under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of unusual or extraordinary discharges. If any unusual or extraordinary discharge including a "bypass" or "upset", as defined herein, should occur from a facility and the discharge enters or could be expected to enter surface waters, the operator shall promptly notify, in no case later than within 24 hours, the department and the VSMP authority by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse effects on aquatic life and the known number of fish killed. The operator shall reduce the report to writing and shall submit it to the department and the VSMP authority within five days of discovery of the discharge in accordance with Part III I 2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;

2. Breakdown of processing or accessory equipment;

3. Failure or taking out of service of some or all of the facilities; and

4. Flooding or other acts of nature.

I. Reports of noncompliance. The operator shall report any noncompliance which may adversely affect surface waters or may endanger public health.

1. An oral report to the department and the VSMP authority shall be provided within 24 hours from the time the operator becomes aware of the circumstances. The following shall be included as information that shall be reported within 24 hours under this subdivision:

a. Any unanticipated bypass; and

b. Any upset that causes a discharge to surface waters.

2. A written report shall be submitted within five days and shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and

c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The department may waive the written report on a case-by-case basis for reports of noncompliance under Part III I if the oral report has been received within 24 hours and no adverse impact on surface waters has been reported.

3. The operator shall report all instances of noncompliance not reported under Part III I 1 or 2 in writing as part of the SWPPP. The reports shall contain the information listed in Part III I 2.

NOTE: The reports required in Part III G, H and I shall be made to the department and the VSMP authority. Reports may be made by telephone, email, or by fax. For reports outside normal working hours, leaving a recorded message shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Management maintains a 24-hour telephone service at 1-800-468-8892.

4. Where the operator becomes aware of a failure to submit any relevant facts, or submittal of incorrect information in any report, including a registration statement, to the department or the VSMP authority, the operator shall promptly submit such facts or correct information.

J. Notice of planned changes.

1. The operator shall give notice to the department and the VSMP authority as soon as possible of any planned physical alterations or additions to the permitted facility or activity. Notice is required only when:

a. The operator plans an alteration or addition to any building, structure, facility, or installation that may meet one of the criteria for determining whether a facility is a new source in 9VAC25-870-420;

b. The operator plans an alteration or addition that would significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this general permit; or

2. The operator shall give advance notice to the department and VSMP authority of any planned changes in the permitted facility or activity, which may result in noncompliance with state permit requirements.

K. Signatory requirements.

1. Registration statement. All registration statements shall be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this chapter, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the

explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this chapter, a principal executive officer of a public agency includes: (i) the chief executive officer of the agency or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

2. Reports, etc. All reports required by this general permit, including SWPPPs, and other information requested by the board or the department shall be signed by a person described in Part III K 1 or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part III K 1;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the operator. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

c. The signed and dated written authorization is included in the SWPPP. A copy must be provided to the department and VSMP authority, if requested.

3. Changes to authorization. If an authorization under Part III K 2 is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization satisfying the requirements of Part III K 2 shall be submitted to the VSMP authority as the administering entity for the board prior to or together with any reports or information to be signed by an authorized representative.

4. Certification. Any person signing a document under Part III K 1 or 2 shall make the following certification:

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to comply. The operator shall comply with all conditions of this general permit. Any state permit noncompliance constitutes a violation of the Virginia Stormwater Management Act and the Clean Water Act, except that noncompliance with certain provisions of this general permit may constitute a violation of the Virginia Stormwater Management Act but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for state permit

termination, revocation and reissuance, or modification; or denial of a state permit renewal application.

The operator shall comply with effluent standards or prohibitions established under § 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this general permit has not yet been modified to incorporate the requirement.

M. Duty to reapply. If the operator wishes to continue an activity regulated by this general permit after the expiration date of this general permit, the operator shall submit a new registration statement at least 90 days before the expiration date of the existing general permit, unless permission for a later date has been granted by the board. The board shall not grant permission for registration statements to be submitted later than the expiration date of the existing general permit.

N. Effect of a state permit. This general permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State law. Nothing in this general permit shall be construed to preclude the institution of any legal action under, or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by § 510 of the Clean Water Act. Except as provided in general permit conditions on "bypassing" (Part III U) and "upset" (Part III V), nothing in this general permit shall be construed to relieve the operator from civil and criminal penalties for noncompliance.

P. Oil and hazardous substance liability. Nothing in this general permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties to which the operator is or may be subject under §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law or § 311 of the Clean Water Act.

Q. Proper operation and maintenance. The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the operator to achieve compliance with the conditions of this general permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by the operator only when the operation is necessary to achieve compliance with the conditions of this general permit.

R. Disposal of solids or sludges. Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering surface waters and in compliance with all applicable state and federal laws and regulations.

S. Duty to mitigate. The operator shall take all steps to minimize or prevent any discharge in violation of this general permit that has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to halt or reduce activity not a defense. It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this general permit.

U. Bypass.

1. "Bypass," as defined in 9VAC25-870-10, means the intentional diversion of waste streams from any portion of a treatment facility. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for

essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of Part III U 2 and 3.

2. Notice.

a. Anticipated bypass. If the operator knows in advance of the need for a bypass, the operator shall submit prior notice to the department, if possible at least 10 days before the date of the bypass.

b. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Part III I.

3. Prohibition of bypass.

a. Except as provided in Part III U 1, bypass is prohibited, and the board or department may take enforcement action against an operator for bypass unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage. Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The operator submitted notices as required under Part III U 2.

b. The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three conditions listed in Part III U 3 a.

V. Upset.

1. An "upset," as defined in 9VAC25-870-10, means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based state permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based state permit effluent limitations if the requirements of Part III V 4 are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.

3. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

4. An operator who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:

a. An upset occurred and that the operator can identify the cause(s) of the upset;

b. The permitted facility was at the time being properly operated;

c. The operator submitted notice of the upset as required in Part III I; and

d. The operator complied with any remedial measures required under Part III S.

5. In any enforcement proceeding, the operator seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and entry. The operator shall allow the department as the board's designee, the VSMP authority, EPA, or an authorized representative of either entity (including an authorized contractor), upon presentation of credentials and other documents as may be required by law to:

1. Enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this general permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this general permit;

3. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this general permit; and

4. Sample or monitor at reasonable times, for the purposes of ensuring state permit compliance or as otherwise authorized by the Clean Water Act or the Virginia Stormwater Management Act, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. State permit actions. State permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the operator for a state permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any state permit condition.

Y. Transfer of state permits.

1. State permits are not transferable to any person except after notice to the department. Except as provided in Part III Y 2, a state permit may be transferred by the operator to a new operator only if the state permit has been modified or revoked and reissued, or a minor modification made, to identify the new operator and incorporate such other requirements as may be necessary under the Virginia Stormwater Management Act and the Clean Water Act.

2. As an alternative to transfers under Part III Y 1, this state permit may be automatically transferred to a new operator if:

a. The current operator notifies the department at least 30 days in advance of the proposed transfer of the title to the facility or property;

b. The notice includes a written agreement between the existing and new operators containing a specific date for transfer of state permit responsibility, coverage, and liability between them; and

c. The department does not notify the existing operator and the proposed new operator of its intent to modify or revoke and reissue the state permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part III Y 2 b.

3. For ongoing construction activity involving a change of operator, the new operator shall accept and maintain the existing SWPPP, or prepare and implement a new SWPPP prior to taking over operations at the site.

Z. Severability. The provisions of this general permit are severable, and if any provision of this general permit or the application of any provision of this state permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this general permit shall not be affected thereby.

9VAC25-880-80. (Repealed.)

9VAC25-880-82. (Repealed.)

9VAC25-880-84. (Repealed.)

9VAC25-880-86. (Repealed.)

9VAC25-880-88. (Repealed.)

9VAC25-880-90. (Repealed.)

9VAC25-880-100. Delegation of authority.

The director, or his designee, may perform any act of the board provided under this chapter, except as limited by § 62.1-44.14 of the Code of Virginia.

FORMS (9VAC25-880)

Department of Environmental Quality Construction Activity Operator Permit Fee Form (rev. 01/2014)

Notice of Termination - General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) (rev. 01/2014)

Registration Statement - General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) (rev. 01/2014)

Transfer Agreement - General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) (rev. 01/2014)

APPENDIX F

General Permit for Discharges of Stormwater from Construction Activities Registration Statement

Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. **Construction Activity Operator:** *(General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)*

   Name:_____

   Contact:_____

   Mailing Address:_____

   City:_____ State:_____ Zip:_____ Phone:_____

   Email address (if available):_____

   Indicate if DEQ may transmit general permit correspondence electronically: Yes ☐ No ☐

2. **Existing General Permit Registration Number (for renewals only):**_____

3. **Name and Location of the Construction Activity:**

   Name:_____

   Address (if available):_____

   City:_____ State:_____ Zip:_____

   County (if not located within a City):_____

   Latitude (decimal degrees):_____ Longitude (decimal degrees):_____

   Name and Location of all Off-site Support Activities to be covered under the general permit:

   Name:_____

   Address (if available):_____

   City:_____ State:_____ Zip:_____

   County (if not located within a City):_____

   Latitude (decimal degrees):_____ Longitude (decimal degrees):_____

4. **Status of the Construction Activity (check only one):** Federal ☐ State ☐ Public ☐ Private ☐

5. **Nature of the Construction Activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.):**

   _____

6. **Name of the Receiving Water(s) and Hydrologic Unit Code (HUC):**

   Name:_____ Name:_____

   HUC:_____ HUC:_____

7. **If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the MS4 operator:**

   _____

8. **Estimated Project Start and Completion Date:**

   Start Date (mm/dd/yyyy):_____ Completion Date (mm/dd/yyyy):_____

9. **Total Land Area of Development (to the nearest one-hundredth acre):**_____

   Estimated Area to be Disturbed (to the nearest one-hundredth acre):_____

10. **Is the area to be disturbed part of a larger common plan of development or sale?** Yes ☐ No ☐

11. **A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.**

12. **Certification:** "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

    Printed Name:_____ Title:_____

    Signature:_____ Date:_____

    (Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)

Instructions for Completing the Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

GENERAL

A. Coverage Under this General Permit.

Any operator applying for coverage under this general permit who is required to submit a Registration Statement (see Section B below) must submit a complete Registration Statement to the Department. The Registration Statement serves as a Notice of Intent for coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10).

B. Single-family Residences.

Operators with an existing stormwater discharge or proposing a new stormwater discharge associated with the construction of a single-family residence separately built, disturbing less than one acre and part of a larger common plan of development or sale is not required to submit a Registration Statement, provided that the stormwater management plan for the larger common plan of development provides permanent control measures (i.e., stormwater management facilities) encompassing the single family residence.

Operators of these types of discharges are authorized to discharge under this general permit immediately upon the general permit's effective date of July 1, 2014.

C. To Apply for Permit Coverage.

1. New Construction Activities. Any operator proposing a new stormwater discharge from construction activities shall submit a complete Registration Statement to the Department prior to the commencement of land disturbance, unless exempted by Section B above. Any operator proposing a new stormwater discharge from construction activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment is immediately authorized to discharge under this general permit and must submit a complete Registration Statement to the Department no later than 30 days after commencing land disturbance; documentation to substantiate the occurrence of the public emergency must accompany the Registration Statement.

2. Existing Construction Activities. Any operator that was authorized to discharge under the general permit issued in 2009, and who intends to continue coverage under this general permit, shall submit a complete Registration Statement to the Department on or before June 1, 2014, unless exempted by Section B above.

D. Where to Submit Registration Statements.

All Registration Statements should be submitted to:

Department of Environmental Quality
Office of Stormwater Management, 10th Floor
P.O. Box 1105
Richmond, VA 23218

LINE-BY-LINE INSTRUCTIONS

Item 1: Construction Activity Operator Information.

"Operator" means the owner or operator of any facility or activity subject to the Stormwater Management Act and regulations. In the context of stormwater associated with a large or small construction activity, operator means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications or (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other state permit or VSMP authority permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions).

The entities that are considered operators will commonly consist of the owner or developer of a project (the party with control of project plans and specifications) or the general contractor (the party with day to day operational control of the activities at the project site which are necessary to ensure compliance with the general permit).

Provide the legal name (do not use a colloquial name), contact, mailing address, telephone number, and email address (if available) of the construction activity operator; general permit coverage will be issued to this operator. Indicate if the Department may transmit general permit correspondence electronically.

Item 2: Existing General Permit Registration Number.

For reapplications only, provide the existing general permit registration number for the construction activity. This item does not need to be completed for new construction activities applying for general permit coverage.

Item 3: Name and Location of the Construction Activity Information.

Provide the official name, street address (if available), city or county (if not located within a City) of the construction activity. Also, provide the latitude and longitude in decimal degrees of the approximate center of the construction activity (e.g., N 37.5000, W 77.5000).

Name and Location of Off-site Support Activity Information.

This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that (i) the support activity is directly related to a construction activity that is required to have general permit coverage; (ii) the support activity is not a commercial operation, nor does it serve multiple unrelated construction activities by different operators; (iii) the support activity does not operate beyond the completion of the construction activity it supports; (iv) the support activity is identified in the registration statement at the time of general permit coverage; (v) appropriate control measures are identified in a SWPPP and implemented to address the discharges from the support activity areas; and (vi) all applicable state, federal, and local approvals are obtained for the support activity.

Provide the official name, street address (if available), City and County (if not located within a City) of all off-site support activities to be covered under this general permit. Also, provide the latitude and longitude in decimal degrees of the approximate center of the off-site support activities (e.g., N 37.5000, W 77.5000). Also, if an off-site support activity is going to be covered under this general permit the total land area of the off-site support activity and the estimated area to be disturbed by the off-site support activity need to be included in Item #9.

Item 4: Status of the Construction Activity.

Indicate the appropriate status (Federal, State, Public, or Private) of the construction activity.

Item 5: Nature of the Construction Activity.

Provide a brief description of the construction activity, such as commercial, residential, agricultural, oil and gas, etc. This list is not all inclusive.

Item 6: Receiving Waters(s) and HUC Information.

Provide the name of the receiving water(s) and corresponding HUC for all stormwater discharges including any stormwater discharges from off-site support activities to be covered under this general permit.

Hydrologic Unit Code or HUC is a watershed unit established in the most recent version of Virginia's 6th order national watershed boundary dataset.

Item 7: MS4 Information.

If stormwater is discharged through a municipal separate storm sewer system (MS4), provide the name of the MS4 operator. The name of the MS4 operator is generally the Town, City, County, Institute or Federal facility where the construction activity is located.

Item 8: Construction Activity Start and Completion Date Information.

Provide the estimated start date (month/day/year) of the construction activity. Provide the estimated completion date (month/day/year) of the construction activity.

Item 9: Construction Activity Area Information.

Provide the total area (to the nearest one-hundredth acre) of the development (i.e.., the total acreage of the larger common plan of development or sale). Include the total acreage of any off-site support activity to be covered under this general permit.

Provide the estimated area (to the nearest one-hundredth acre) to be disturbed by the construction activity. Include the estimated area of land disturbance that will occur at any off-site support activity to be covered under this general permit.

Item 10: Common Plan of Development or Sale Information.

Indicate if the area to be disturbed by the construction activity is part of a larger common plan of development or sale. Larger common plan of development or sale is defined as a contiguous area where separate and distinct construction may be taking place at different times on different schedules. Plan is broadly defined as any announcement or documentation, including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, etc., or physical demarcation such as boundary signs, lot stakes, or surveyor markings indicating that construction activities may occur.

Item 11: Stormwater Pollution Prevention Plan (SWPPP).

A Stormwater Pollution Prevention Plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.

Item 12: Certification.

A properly authorized individual associated with the operator identified in Item 1 of the Registration Statement is responsible for certifying and signing the Registration Statement. **Please sign the Registration Statement in INK.**

State statutes provide for severe penalties for submitting false information on the Registration Statement. State regulations require that the Registration Statement be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:

(i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or

(ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

DEPARTMENT OF ENVIRONMENTAL QUALITY
CONSTRUCTION ACTIVITY OPERATOR PERMIT FEE FORM

(Please Type or Print All Information)

Instructions: Applicants for a Construction Activity Individual Permit are required to pay permit application fees. Fees are also required for registration for coverage under a Construction Activity General Permit. Fees must be paid when applications for state permit issuance, reissuance, modification or transfer are submitted. Applications will be considered incomplete if the proper fee is not paid and will not be processed until the fee is received.

The fee schedule for state permits is included with this form. Fees for state permit issuance, reissuance, maintenance, modification and transfer are included. Once you have determined the fee for the type of application you are submitting, complete this form. The original copy of the form and your check or money order payable to "**Treasurer of Virginia**" should be mailed to:

Department of Environmental Quality
Receipts Control
P.O. Box 1104
Richmond, VA 23218

A copy of this form and a copy of your check or money order should accompany the permit application (or registration statement). You should retain a copy for your records.

Construction Activity Operator:

Name:_____

Contact:_____

Mailing Address:_____

City:_____ State:_____ Zip:_____ Phone:_____

Email address (if available):_____

Name and Location of the Construction Activity:

Name:_____

City:_____ State:_____ Zip:_____

County:_____

Type of State Permit: (from Fee Schedule) ☐ Construction Activity Individual Permit ☐ Construction Activity General Permit

Type of Action: ☐ New Issuance ☐ Reissuance ☐ Maintenance ☐ Modification ☐ Transfer

Amount of Fee Submitted (from Fee Schedule)**:**_____

Existing General Permit Registration Number (if applicable)**:**_____

FOR DEQ USE ONLY	
Date:	DC #:

CONSTRUCTION ACTIVITY PERMIT FEE SCHEDULE

A. Individual Permits. The fee for filing a state permit application for a Construction Activity Individual Permit issued by the Board is as follows: (NOTE: Individual permittees pay an annual permit maintenance fee instead of a reapplication fee. The permittee is billed separately by DEQ for the annual permit maintenance fee.)

TYPE OF STATE PERMIT	ISSUANCE
Individual Permit for Discharges from Construction Activities	$15,000

B. Registration Statements. The fee for filing a state permit application (registration statement) for coverage under a Construction Activity General Permit issued by the Board, including a state or federal agency that does not administer a project in accordance with approved annual standards and specifications, is as follows:

TYPE OF STATE PERMIT	ISSUANCE
General / Stormwater Management - Small Construction Activity/Land Clearing (Areas within common plans of development or sale with land-disturbance acreage less than one acre)	$290
General / Stormwater Management - Small Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than one acre and less than five acres)	$2,700
General / Stormwater Management - Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than five acres and less than 10 acres)	$3,400
General / Stormwater Management - Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 10 acres and less than 50 acres)	$4,500
General / Stormwater Management - Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 50 acres and less than 100 acres)	$6,100
General / Stormwater Management - Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 100 acres)	$9,600

The fee for filing a state permit application (registration statement) for coverage under a Construction Activity General Permit issued by the Board for a state or federal agency that administers a project in accordance with approved annual standards and specifications is as follows:

TYPE OF STATE PERMIT	ISSUANCE
Construction General / Stormwater Management – Phase I Land Clearing (“Large” Construction Activity – Sites or common plans of development or sale equal to or greater than 5 acres)	$750
Construction General / Stormwater Management – Phase II Land Clearing (“Small” Construction Activity – Sites or common plans of development or sale equal to or greater than 1 acre and less than 5 acres)	$450

C. State Permit Modification or Transfer Fees. The following fees apply to the modification or transfer of a Construction Activity Individual Permit or a Construction Activity General Permit issued by the Board. The fee assessed shall be based on the total disturbed acreage of the construction activity. In addition to the state permit modification fee, modifications resulting in an increase in total disturbed acreage shall pay the difference in the initial Construction Activity General Permit fee paid and the Construction Activity General Permit fee that would have applied for the total disturbed acreage in Section B above.

TYPE OF STATE PERMIT	MODIFICATION
General / Stormwater Management – Small Construction Activity/Land Clearing (Areas within common plans of development or sale with land disturbance acreage less than one acre)	$20
General / Stormwater Management – Small Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than one and less than five acres)	$200
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than five acres and less than 10 acres)	$250
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 10 acres and less than 50 acres)	$300
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 50 acres and less than 100 acres)	$450
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 100 acres)	$700
Individual Permit for Discharges from Construction Activities	$5,000

D. State Permit Maintenance Fees. The following annual state permit maintenance fees apply to each state permit identified below, including expired permits that have been administratively continued. No annual state permit maintenance fee is required for coverage under a Construction Activity General Permit for a state or federal agency that administers a project in accordance with approved annual standards and specifications.

TYPE OF STATE PERMIT	MAINTENANCE
General / Stormwater Management – Small Construction Activity/Land Clearing (Areas within common plans of development or sale with land disturbance acreage less than one acre)	$50
General / Stormwater Management – Small Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than one and less than five acres)	$400
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than five acres and less than 10 acres)	$500
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 10 acres and less than 50 acres)	$650
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 50 acres and less than 100 acres)	$900
General / Stormwater Management – Large Construction Activity/Land Clearing (Sites or areas within common plans of development or sale with land-disturbance acreage equal to or greater than 100 acres)	$1,400
Individual Permit for Discharges from Construction Activities	$3,000

APPENDIX G

Erosion Control and Stormwater Management Plan Application Form & Checklist

Erosion and Sediment Control and Stormwater Management Plan Application Form & Checklist

GENERAL INFORMATION

Application Date: _____

Project Name: _____

Project Address: _____

Tax Map / Parcel Number(s): _____

PROPERTY OWNER / DEVELOPER

Firm Name: _____

Contact Person: _____

Title: _____

Address: _____

City / State / Zip: _____

Telephone: _____ Fax: _____

Email: _____

APPLICANT

Firm Name: _____

Contact Person: _____

Title: _____

Address: _____

City / State / Zip: _____

Telephone: _____ Fax: _____

Email: _____

All the information requested above must be provided for the submittal to be deemed complete.

INFORMATION SUBMITTED

- ☐ Proof of VSMP General Permit Registration Statement completion, as required.
- ☐ Proof of payment of VSMP Permit Fee (Department portion), as required.
- ☐ Payment of VSMP Authority Permit Fee
- ☐ Certified and completed Erosion and Sediment Control and Stormwater Management Application Form and Checklist
- ☐ Erosion and Sediment Control Plan(s) (Plans, Details, etc.) or Agreement in-lieu-of
- ☐ Stormwater Management Design Plan(s) (Plans, Profiles, Details, etc.)
- ☐ Stormwater Pollution Prevention Plan (SWPPP), including Erosion and Sediment Control, Report, Pollution Prevention Plan, and Stormwater Management narrative and calculations.
- ☐ BMP Maintenance Agreement (must be provided and approved prior to plan approval)
- ☐ Erosion and Sediment Control and Stormwater Management Bond Estimate (must be provided and approved prior to VSMP permit approval)
- ☐ Other Local, State, and Federal Requirements

All submittals shall include this completed checklist, and certification statement below signed by the responsible licensed professional or applicant as required by the VSMP Authority.

For all second and subsequent submittals, the submitting Engineer shall include a cover letter that provides explanation as to how each comment is addressed and references the relevant plan or narrative location. In addition, significant changes in the plan should be listed.

Additional comments may be warranted depending upon how prior submittal comments were addressed.

Required Certification

I have reviewed the accompanying plan submission, this checklist, the Stormwater Ordinance and applicable Subdivision Ordinance and Zoning Ordinance provisions. The submitted plan is complete and meets all applicable requirements to the best of my knowledge.

_____ _____

Licensed Professional / Applicant Signature **Date**

_____

Printed Name

Section 1: Erosion and Sediment Control

GENERAL

☐ Complete set of plans; include all sheets pertaining to the site grading and stormwater and any activities impacting erosion and sediment control and drainage:

- Existing conditions
- Demolition
- Site grading
- Erosion and sediment control
- Storm sewer systems
- Stormwater management facilities
- Utility layout
- Landscaping
- On-site and off-site borrow and disposal areas that do not have separate approved ESC Plans

☐ Variance if necessary, requested in writing, for the plan approving authority to waive or modify any of the minimum standards and specifications of the V*irginia Erosion and Sediment Control Handbook (VESCH)* deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

☐ Professional's seal; the designer's original seal, signature, and date are required on the cover sheet of each Narrative and each set of Plan Sheets, as required by the VSMP Authority. A facsimile is acceptable for subsequent Plan Sheets.

PLANS

☐ Vicinity map - a small map locating the site in relation to the surrounding area. Include any landmarks that might assist in locating the site.

☐ Indicate north - The direction of north in relation to the site.

☐ Off-site areas - Include any off-site land-disturbing activities (e.g., borrow sites, disposal areas, waste areas, utility extensions, etc.) not covered by a separate approved ESC Plan.

☐ Erosion and sediment control notes - At a minimum, include the erosion and sediment control notes found in the *VESCH*. Ensure that all applicable Minimum Standards not covered elsewhere in the plan have been addressed. Include a note that any off-site land-disturbing activity associated with the project must have an approved ESC Plan.

☐ Legend - Provide a complete listing of all ESC measures used, including the VESCH uniform code symbol and the standard and specification number. Include any other items necessary to identify pertinent features in the plan.

☐ Property lines and easements - Show all property and easement lines. For each adjacent property, list the deed book and page number and the property owner's name and address.

☐ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.

☐ Limits of clearing and grading – Delineate all areas that are to be cleared and graded.

☐ Disturbed area estimates – in acres or square feet.

☐ Protection of areas not being cleared - Fencing or other measures to protect areas that are not to be disturbed on the site.

☐ Critical areas – Note all critical areas on the plan.

☐ Existing contours - The existing contours of the site at no more than a five foot contour interval.

☐ Final contours and elevations - Changes to the existing contours, including final drainage patterns, at no more than a two foot contour interval. Note the finished floor elevation (FFE) of all buildings on site, including basements.

☐ Existing and proposed spot elevations – to supplement existing and proposed contours, topography, or site grading information. Spot elevations may replace final contours in some instances, especially if terrain is in a low lying area or relatively flat.

☐ Existing site features – includes roads, buildings, homes, utilities, streams, fences, structures, and other important surface features of the site.

☐ Soils map – includes soil symbols, boundaries, and legend in accordance with the current Soil Survey of Campbell County.

☐ Environmental inventory – generally includes tidal shores and wetlands, non-tidal wetlands, resource protection area, hydric soils and slopes steeper than 25 percent. For wetlands, provide a copy of issued permits or satisfactory evidence that appropriate permits are being pursued for the entire project.

☐ 100-year floodplain limits – also includes any special flood hazard area or flood zones based on appropriate Federal Management Agency Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBMs) of Campbell County.

☐ Drainage areas - includes offsite and onsite areas, existing or proposed as applicable. Include drainage divides and directional labels for all subareas at points of interest and size (in acres), weighted runoff coefficient or curve number and times of concentration for each subarea.

☐ Critical erosion areas – these areas require special consideration or unique erosion and sediment control measures. Refer to the VESCH for criteria.

☐ Site development - All improvements such as buildings, parking lots, access roads, utility construction, above and below ground utilities, stormwater management and drainage facilities, trails or sidewalks, proposed vegetation and landscaping, amenities, etc. Show all physical items that could affect or be affected by erosion, sediment, and drainage.

☐ Adequate conveyances – Ensure that stormwater conveyances with adequate capacity and adequate erosion resistance have been for provided all on-site concentrated stormwater runoff. Off-site channels that receive runoff from the site, including those receiving runoff from stormwater management facilities, must be adequate. Increased volumes of sheet flows must be diverted to a stable outlet, adequate channel, pipe or pipe system, or a stormwater management facility.

☐ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the VESCH.

☐ Temporary stockpile areas – Includes staging and equipment storage areas as required for onsite or offsite construction activities, or indicate that none are anticipated for this project.

☐ Direction of flow for conveyances - Indicate the direction of flow for all stormwater conveyances (storm drains, stormwater conveyance channels).

☐ Maintenance - A schedule of regular inspections, maintenance, and repair of temporary erosion and sediment control structures and permanent stormwater management facilities should be set forth.

☐ Storm drain profiles - Provide profiles of all storm drains except roof drains. If the type of pipe (RCP, CMP, HDPE, etc.) is not called out on the profiles, then the most conservative pipe material that may be specified for the project must be used in the adequacy calculations.

☐ Detail drawings - Any structural practices used that are not found in the VESCH or approved annual agency specifications should be described and illustrated with detail drawings.

☐ Trench dewatering – includes methods and erosion and sediment control if anticipated for the project.

☐ Construction sequence – outlines the anticipated sequence for installation of erosion and sediment controls and site grading and utility work to be performed for the project by the site contractor.

☐ Phasing plan – required for larger project sites that are to be developed in stages or phases.

☐ Professional seal and signature – as required by the VSMP Authority, on final and complete approved plans, drawings, technical reports, and specifications.

NARRATIVE

☐ Project description - Briefly describe the nature and purpose of the land-disturbing activity. Provide the area (acres) to be disturbed. Identify the Owner of the development.

☐ Existing site conditions - A description of the existing topography (% slopes), ground cover, and drainage (on-site and receiving channels).

☐ Adjacent areas - A description of all neighboring areas such as residential developments, agricultural areas, streams, lakes, roads, etc., that might be affected by the land disturbance.

☐ Off-site areas - Describe any off-site land-disturbing activities that may occur (borrow sites, disposal areas, easements, etc.). Identify the Owner of the off-site area and the locality responsible for plan review. Include a statement that any off-site land-disturbing activity associated with the project must have an approved ESC Plan. Submit documentation of the approved ESC Plan for each of these sites.

☐ Soils - Provide a description of the soils on the site, giving such information as soil name, mapping unit, ability to erode, permeability, surface runoff, and a *brief* description of depth,

texture and soil structure. Show the site location on the Soil Survey, if it is available. Include a plan showing the boundaries of each soil type on the development site.

☐ Critical areas - A description of areas on the site that have potentially serious erosion problems or that are sensitive to sediment impacts (steep slopes, watercourses, wet weather / underground springs, etc.).

☐ Erosion and sediment control measures - A description of the structural and vegetative methods that will be used to control erosion and sedimentation on the site. Controls should satisfy applicable minimum standards and specifications in Chapter 3 of the 1992 *Virginia Erosion and Sediment Control Handbook* (VESCH).

☐ Management strategies / Sequence of construction - Address management strategies, the sequence of construction, and any phasing of installation of ESC measures.

☐ Stabilization measures - A brief description, including specifications, of how the site will be stabilized after construction is completed, including temporary and permanent seeding and mulching, paving, stone, soil stabilization blankets, and matting, sodding, landscaping, or special stabilization techniques to be used at the site.

☐ Maintenance of ESC measures - A schedule of regular inspections, maintenance, and repair of erosion and sediment control structures should be set forth.

☐ Calculations for temporary erosion and sediment control measures - For each temporary ESC measure, provide the calculations required by the standards and specifications.

☐ Specifications for erosion and sediment control measures - For each erosion and sediment control measure employed in the plan, include in the Narrative the following sections from the standard and specification in the VESCH:

1. Construction Specifications
2. Installation
3. Maintenance
4. Any approved variances or revisions to the standards and specifications.

☐ Temporary sediment basin design data sheet – submitted for each basin along with a schematic or sketch cross section showing applicable design and construction data, storage volumes (wet-dry), dimensions, and elevations. Peak design runoff should be based on the 2- or 25-year design storm event based on maximum disturbed site conditions (existing, interim, or proposed conditions).

MINIMUM STANDARDS (must be on plan sheets)

☐ **MS-1**: Has temporary stabilization been addressed for any period longer than 14 days and permanent stabilization been addressed for any period longer than one year in the narrative?

☐ **MS-2**: Has stabilization of soil stockpiles, borrow areas, and disposal areas been addressed in the narrative and on the plan?

☐ **MS-3:** Has the establishment and maintenance of permanent vegetative stabilization been addressed?

☐ **MS-4**: Does the plan specifically state that sediment-trapping facilities shall be constructed as a first step in land-disturbing activities?

☐ **MS-5**: Does the plan specifically state that stabilization of earthen structures is required immediately after installation? Is this noted for each measure on the plan?

☐ **MS-6**: Are sediment traps and sediment basins specified where needed and designed to the standard and specification?

☐ **MS-7:** Have the design and temporary/permanent stabilization of cut and fill slopes been adequately addressed? Is surface roughening provided for slopes steeper than 3:1?

☐ **MS-8**: Have adequate temporary or permanent conveyances (paved flumes, channels, slope drains) been provided for concentrated stormwater runoff on cut and fill slopes?

☐ **MS-9:** Has water seeping from a slope face been addressed (e.g., subsurface drains)?

☐ **MS-10**: Is adequate inlet protection provided for all operational storm drain and culvert inlets?

☐ **MS-11**: Are adequate outlet protection and/or channel linings provided for all stormwater conveyance channels and receiving channels? Is there a schedule indicating:

1. Dimensions of the outlet protection? Lining? Size of riprap?
2. Cross section and slope of the channels? Type of lining? Size of riprap, if used?

☐ **MS-12:** Are in-stream protection measures required so that channel impacts are minimized?

☐ **MS-13:** Are temporary stream crossings of non-erodible material required where applicable?

☐ **MS-14**: Are all applicable federal, state and local regulations pertaining to working in or crossing live watercourses being followed?

☐ **MS-15:** Has immediate re-stabilization of areas subject to in-stream construction (bed and banks) been adequately addressed?

☐ **MS-16**: Have disturbances from underground utility line installations been addressed?

1. No more than 500 linear feet of trench open at one time?
2. Excavation material placed on the uphill side of trenches (except where prohibited by safety standard requirements)?
3. Effluent from dewatering filtered or passed through a sediment-trapping device?
4. Proper backfill, compaction, and restabilization?

☐ **MS-17**: Is the transport of soil and mud onto public roadways properly controlled? (i.e., Construction Entrances, wash racks, transport of sediment to a trapping facility, cleaning of roadways at the end of each day, no washing before sweeping and shoveling)

☐ **MS-18:** Has the removal of temporary practices been addressed?

Have the removal of accumulated sediment and the final stabilization of the resulting disturbed areas been addressed?

☐ **MS-19:** Are properties and waterways downstream from development adequately protected from sediment deposition, erosion, and damage due to increases in volume, velocity and peak flow rate of stormwater runoff? Have adequate channels been provided on-site?

a) Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
b) Adequacy of all channels and pipes shall be verified in the following manner:
    i) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
        (1) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

(2) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(3) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

ii) If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or

(2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

c) The applicant shall provide evidence of permission to make the improvements.

d) All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

e) If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

f) Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

g) All on-site channels must be verified to be adequate.

h) Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

i) In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

j) All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

k) Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to:
   i) Detain the water quality volume and to release it over 48 hours;
   ii) Detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and
   iii) Reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the act.

l) For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:51 for the act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) permit regulations.

m) Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) permit regulations shall be deemed to satisfy the requirements of minimum standard 19.

Section 2: Stormwater Management

GENERAL

☐ Certification: Professional Seal and Signature required on final and complete approved stormwater management plans, drawings, technical reports, and specifications, as required by the VSMP Authority.

☐ Exception Request: If necessary, request in writing to the VSMP authority to waive or modify any requirements of the stormwater ordinance deemed inappropriate based on site conditions specific to this review case only. Exceptions, which are approved, shall be properly documented in the plan and become part of the approved stormwater management plan for the site.

☐ SWM Maintenance Agreement: An agreement is required to be prepared and executed with Campbell County for each proposed BMP for the project prior to permit approval.

☐ FEMA FIRM Panel: Reference designated special flood hazard areas or zone designations associated with the site, as applicable.

☐ Sequence of Construction: Modification plan(s), including notes and calculations, shall be provided for temporary sediment control structures which will be converted to permanent SWM/BMP structures. Modifications of temporary sediment control structures to bio-retention, infiltration, and filtering system facilities is discouraged.

REPORT

☐ Format: The report should be bound in 8 ½ x 11 inch size format. Campbell County recommends using the available comprehensive SWPPP template (refer to Appendix I) for the report. Report shall generally include:

- Title sheet
- Date
- Project identification
- Owner and preparer information
- Table of contents
- Narrative description of methodology and design of stormwater management facilities
- Summary tables showing compliance with the regulations
- Calculations (detailed below)

☐ Drainage Area Map: The map should be a maximum scale of 1" = 200' scale and include the following:

- Drainage area boundaries, including delineation of forest/open space, managed turf, and impervious surface(s), for pre- and post-development conditions;
- Time of concentration (Tc) flow paths for pre- and post-development conditions; and
- Information tables for each drainage and sub-drainage areas shown on the map to include the following:
  - Total area;
  - Area of forest/open space, managed turf, and impervious surface(s);
  - Runoff coefficient or curve number; and
  - Time of concentration.

☐ Soils Map: The map should include soil symbols, hydrologic soil group, boundaries, and legend in accordance with the current Soil Survey of Campbell County, Virginia with approximate locations of the project site, BMPs, and applicable drainage basins.

☐ Calculations

- Conveyance Systems
  - Storm sewer design computations based on 10-year design event.
  - Hydraulic grade line computations based on 10-year design event.
  - Inlet computations based on current VDOT procedures for spread, ponding depth and grate size required.
  - Culvert headwater computations. Design based on 10-year design storm event, or as otherwise required by VDOT, and check only for 100-year storm event.
  - Open channel computations as required.
  - Outlet protection or special energy dissipaters.

- Water Quality Control
  - Runoff curve number or coefficient determinations – pre-developed, post-developed, and ultimate development (as applicable) land use scenarios.
  - Runoff reduction method spreadsheet to show water quality compliance.

- Water Quantity Control
  - Hydrologic Computations
    - The Soil Conservation Service (SCS) based methodology is preferred for the design of stormwater management/BMP facilities with watersheds. If a site is less than 200 acres, modified rational method or rational method may be used at the discretion of the VSMP Authority.

    Use the modified runoff curve number as provided by the runoff reduction spreadsheet for each drainage area.

- Time of concentration: Pre-developed, post-developed, and ultimate development (as applicable) indicating overland, shallow concentrated, and channel flow components (200 ft. maximum length for overland flow).
- Hydrographs: Provide graphical and/or tabular information for pre- and post-development conditions for the 1-, 2-, 10-, and 100-year design storm events.

Δ Hydraulic Computations

- 1-, 2-, 10-, and 100-year design storm events.
- Elevation- or stage-storage curve and/or tabular data.
- Emergency spillway capacity and depth of flow.
- Elevation – discharge (outlet rating) curve and/or table. Provide all supporting calculations and/or design assumptions.

o Miscellaneous Computations

- Anti-seep collar design (concrete preferred) or match material type.
- Riser/base structure floatation analyses. FS = 1.25 minimum.

PLANS

☐ <u>General</u>

o Plan View at 1" = 50' scale or less (1" = 30', 1" = 40', etc.)
o North arrow and plan legend
o Property lines
o Adjacent property information
o Existing site features and existing impervious cover areas
o Forest/open space, managed turf, and impervious cover tabulations
o Existing drainage facilities (natural or manmade)
o Existing environmentally sensitive areas (RPS, wetlands, floodplain, steep slopes, critical soils, buffers, etc.)
o Existing and proposed contours (1' or 2' contour interval) and spot elevations as necessary to define high and low topographic information
o Existing and proposed easement locations
o Proposed site improvements and proposed impervious cover areas
o Proposed landscaping and seeding plans (disturbed areas, pond interior, etc.)
o Proposed slope stabilization areas (riprap, blankets, mattings, walls, etc.)
o Delineation of ponding, headwater, surcharge, or backwater areas which may affect adjacent existing or proposed buildings, structures, or upstream adjacent properties.
o Test boring locations with reference surface elevations (if known)
o Existing and proposed site utilities and protection measures
o Erosion and sediment control measures (for site and BMP)
o Maintenance or access corridors to permanent stormwater BMPs or drainage facilities

☐ Stormwater Conveyance Systems

- o Plan views
  - Δ Storm drain lengths, sizes, types, classes and slopes for all segments. Label directly on plan or use a structure/pipe schedule.
  - Δ Structure (inlets, manholes, junctions, end sections, etc.) information shall be provided for each structure and include, but not limited to, a unique identifier, rim elevation, pipe inverts and sizes, type, and required grate type or top unit and lengths labeled.
  - Δ Adequate horizontal clearance from other site utilities or structures.
- o Profiles are generally not required but are encouraged to expedite review. If not provided, ensure all pipe segments have adequate minimum cover, do not exceed maximum depths of cover for the type/class of pipe specified and do not conflict with other site utilities or excavation areas.
- o Details
  - Δ Typical storm drain bedding details or reference note.
  - Δ Typical pipe and/or underdrain details or reference note.
  - Δ Standard details or reference note for all purposed access structure types (inlets, manholes, junctions, etc.).
  - Δ Inlet shaping detail or applicable reference note.
  - Δ Step detail or applicable reference note (if depth of 4 feet or more).
  - Δ Typical open channel details with designation, location, shape, type, bottom width, top width, lining, slope, length, side slope, and installation depth required for construction. Channel design data as necessary may also be included.
  - Δ Outlet protection at all pipe outfalls.

☐ Stormwater Management Facilities (Best Management Practices – BMPs)

- o Plan views
  - Δ Location and dimensions of proposed stormwater conveyance systems and BMPs with appropriate labeled construction data and information.
  - Δ Location and dimensions of pretreatment devices, as required by the BMP Clearinghouse specifications for the selected county BMP facility type.
  - Δ Delineation of permanent pool(s) and 1-, 2-, 10-, and 100-year design water surface elevations.
  - Δ Emergency spillway level and outlet channel section
- o Details: Provide cross-section and details, as suggested in the VA DEQ Stormwater Design Specification provided on the Virginia BMP Clearinghouse website.
- o Notes: Provide notes, as suggested in the VA DEQ Stormwater Design Specification provided on the Virginia BMP Clearinghouse website, including the following:

- Δ BMP landscaping (deep, shallow, fringe, perimeter, etc.)
- Δ Maintenance provisions for each proposed BMP
  - Entity responsible for maintenance identified.
  - Long-term schedule for inspection/maintenance of the facility and forebay(s), as applicable.
  - Access from public right-of-way or publicly traveled road.
  - Easement provided encompassing high water pool and buffer, principal and emergency spillways, outlet structures, forebays, embankment area, and possible sediment removal stockpile areas.

☐ Construction Specifications and General Notes

- o Provisions to control base stream or storm flow conditions encountered during construction.
- o Site and subgrade preparation requirements.
- o Embankment, fill, and backfill material soil and placement (lift) thickness requirements.
- o Compaction and soil moisture content requirements.
- o Geosynthetics for drainage, filtration, moisture barrier, separation, and reinforcement purposes.
- o Storm drain, underdrain, and pipe conduit requirements.
- o Minimum depth of pipe cover for temporary construction and final cover conditions.
- o Concrete requirements for structural components.
- o Riprap and slope protection.
- o Access or maintenance road surface, base, subbase.
- o Temporary and permanent stabilization measures.
- o Temporary or permanent safety fencing.
- o Dust and traffic control (if warranted).
- o Construction monitoring and certification by a certified project inspector for SWM.

GEOTECHNICAL REQUIREMENTS

☐ Geotechnical report with recommendations specific to BMP facility type selected as required by the BMP clearinghouse. Report prepared by a registered professional engineer, as required by the VSMP Authority. Requires submission, review, and approval prior to issuance of VSMP Permit.

ADDITIONAL COMMENTS OR INFORMATION SPECIFIC TO THE PLAN

APPENDIX H

Completeness Review Form

Completeness Review Form

On behalf of Campbell County, this is a required notification that the information provided by [Applicant] on [Date] on behalf of [Owner/Developer] for the project known as [Project Name] located at [Address] or[Tax Map / Parcel Number(s)] appears to include the required elements for erosion and sediment control and stormwater management submittal for review. Official review and/or approval of the initial submittal will be provided to the Applicant and Owner within 60 calendar days and subsequent submittals within 45 days of the date of the letter.

_____ _____

[Name of Authority Representative] **Response Date**

_____

[Title of Authority Representative]

INFORMATION SUBMITTED

- ☐ Proof of VSMP General Permit Registration Statement completion, as required.
- ☐ Payment of VSMP Permit Fee (Department portion), as required.
- ☐ Payment of VSMP Authority Permit Fee
- ☐ Certified and completed Erosion and Sediment Control and Stormwater Management Application Form and Checklist
- ☐ Erosion and Sediment Control Plan(s) (Plans, Details, etc.)
- ☐ Stormwater Management Design Plan(s) (Plans, Profiles, Details, etc.)
- ☐ Stormwater Pollution Prevention Plan (SWPPP), including Erosion and Sediment Control, Report, Pollution Prevention Plan, and Stormwater Management narrative and calculations.
- ☐ Other Local, State and Federal Agency Requirements

For plans not approved by the Administrator, all comments shall be addressed by the applicant within 180 calendar days. Plans that are not resubmitted within this time period may be subject to a new application fee.

Project Name: _____ SWPPP Dated: _____

Tax Map / Parcel No(s): _____ Plans Dated: _____

Submittal Number: _____

APPENDIX I

Comprehensive Stormwater Pollution Prevention Plan (SWPPP) Template

SWPPP Template

Instructions

To help you develop the narrative section for VSMP permit and construction site SWPPP, Campbell County has created this electronic comprehensive SWPPP template, which includes the requirements erosion and sediment control, stormwater management, and pollution prevention plans. The template is designed to help guide you through the development process and help ensure that your SWPPP addresses all the necessary elements stated in your construction general permit. For further guidance on developing your SWPPP, you may want to visit the EPA's website at www.epa.gov/npdes/swpppguide.

This template covers the SWPPP elements that most construction general permits require. However, there are two major reasons to customize this template:

1. To reflect the terms and conditions of your construction general permit and
2. To reflect the conditions at your site.

Tips for completing the SWPPP template

- Sections 1, 2, 3, and 4 of the Comprehensive SWPPP are required for the plan review submittal, as noted below. Sections 5, 6, and 7 of the Comprehensive SWPPP are not required to be completed at time of plan review submittal. However, these sections must be completed by the Applicant and/or the Contractor prior to construction. The Comprehensive SWPPP must be available at the construction site at all times during construction.
- The erosion and sediment control (Section 2) and stormwater management (Section 3) sections of the SWPPP shall be appropriately sealed and signed by a professional engineer, architect, surveyor, or landscape architect registered in the Commonwealth of Virginia pursuant to Article 1 (§ 54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia, as required by the VSMP Authority.
- Multiple operators may share the same SWPPP, but make sure that responsibilities are clearly described.
- Modify this SWPPP template so that it addresses the requirements in your construction general permit and meets the needs of your project. Consider adding permit citations in the SWPPP when you address a specific permit requirement.

Stormwater Pollution Prevention Plan

For:

Insert Project Name
Insert Project Site Location/Address
Insert City, State, Zip Code
Insert Project Site Telephone Number (if applicable)

Operator(s):

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number

Stormwater Manager:

Insert Name

SWPPP Contact(s):

Insert Name
Insert Name
Insert Name

SWPPP Preparation Date:

mm / dd / yyyy

Estimated Project Dates:

Start of Construction: mm / dd / yyyy
Completion of Construction: mm / dd / yyyy

CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

Table of Contents

SECTION 1: SITE INFORMATION

1.1 Project/Site Information

1. Project/Site Name: Insert Project Name
2. Project Street/Location: Insert Project Location
3. City/Town: Insert City 4. State: Insert State 5. Zip Code: Insert Zip Code
6. County: Insert County
7. Subdivision: Insert Subdivision
8. Tax Reference Number of Parcel(s): Insert Data
9. Parcel Number(s): Insert Data

   Latitude/Longitude

10. Latitude: Longitude:

    dd º mm ' ss '' N (degrees, minutes, seconds) dd º mm ' ss '' W (degrees, minutes, seconds)

    or Link to e-permitting site

11. Method for determining latitude/longitude:

    ☐ USGS topographic map (specify scale: Insert Scale) ☐ EPA Web site ☐ GPS

    ☐ Other (please specify): Insert Other Method(s)

12. Is this project considered a federal facility? ☐ Yes ☐ No
13. VSMP permit number: Insert Permit Number
    a. (This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the construction general permit.)
14. Type of regional facility/facilities to which site contributes: Insert Type of Facility
15. Regional Facility Street/Location: Insert Facility Location
16. City: Insert City 17. State: Insert State 18. Zip Code: Insert Zip Code

1.2 Contact Information/Responsible Parties

1. **Operator(s)**:

   Insert Company or Organization Name

   Insert Name

   Insert Address

   Insert City, State, Zip Code

   Insert Telephone Number

   Insert Fax/Email

   Insert area of control (if more than one operator at site)

   Repeat as necessary

2. **Project Manager(s) or Site Supervisor(s)**:

   Insert Name

   Insert Company or Organization Name

   Insert Address

   Insert City, State, Zip Code

   Insert Telephone Number

   Insert Fax/Email

   Insert area of control (if more than one operator at site)

   Repeat as necessary

3. **Stormwater Manager and SWPPP Contact(s):**

   Insert Name

   Insert Company or Organization Name

   Insert Address

   Insert City, State, Zip Code

   Insert Telephone Number

   Insert Fax/Email (Optional)

   Repeat as necessary

4. This SWPPP Was Prepared By:

Insert Name

Insert Company or Organization Name

Insert Address

Insert City, State, Zip Code

Insert Telephone Number

Insert Fax/Email

5. Subcontractor(s):

Insert Company or Organization Name

Insert Name

Insert Address

Insert City, State, Zip Code

Insert Telephone Number

Insert Fax/Email

Repeat as necessary

6. Responsible Land Disturber:

Insert Name

Insert DEQ Certification Number

Insert Address

Insert City, State, Zip Code

Insert Telephone Number

Insert Fax/Email

Repeat as necessary

7. Emergency 24 hour contact:

Insert Name

Insert Telephone Number

1.3 Nature and Sequence of Construction Activity

1. Describe the general scope of the work for the project, major phases of construction, etc.:

   INSERT TEXT HERE

2. What is the function of the construction activity?

   ☐ Residential ☐ Commercial ☐ Industrial ☐ Road Construction

   ☐ Linear Utility

   ☐ Other (please specify): INSERT TEXT HERE

3. Estimated Project Start Date: mm / dd / yyyy
4. Estimated Project Completion Date: mm / dd / yyyy

1.4 Construction Site Estimates & Statistics

The following are estimates of the construction site:

1. Construction Site Area to be disturbed _____ acres
2. Total Project Area _____ acres
3. Percentage impervious area before construction _____ %
4. Runoff coefficient before construction Refer to Sect 4.1 & 4.2
5. Percentage impervious area after construction _____ %
6. Runoff coefficient after construction Refer to Sect 4.1 & 4.2
7. Number of Acres treated by Regional Facility _____ acres

1.5 Existing Conditions

1. Soil type(s): Refer to Section 2.5.
2. Slopes (describe current slopes and note any changes due to grading or fill activities): Refer to Section 2.6.
3. Drainage Patterns: Refer to Section 4.1. or provide if Section 4.1 is not required.
4. Vegetation:

   INSERT TEXT HERE

   INSERT TEXT HERE

5. Other:

- INSERT TEXT HERE
- INSERT TEXT HERE

1.6 Receiving Waters

1. Description of receiving waters, include HUC Code for each: INSERT TEXT HERE
2. Description of storm sewer systems: INSERT TEXT HERE
3. Description of waters subject to TMDLs:

Waters subject to TMDLs	Type of Impairment	Cause of Impairment
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

4. Provide link to impaired water referenced from Virginia's TMDL website: INSERT TEXT HERE
5. Describe the designated uses of the water body: INSERT TEXT HERE
6. Please include a description and map of the watershed boundary: INSERT TEXT HERE
7. Please list any measures that will be used to meet the TMDL(s): INSERT TEXT HERE

8. Description of impaired waters:

Impaired Waters	Pollutant	Project Specific Control Measures
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

1.7 Site Features and Sensitive Areas to be Protected

Description of unique features and measures to protect them:

- INSERT TEXT HERE

1.8 Potential Sources of Pollution

[These pollutants must be addressed in the pollution prevention plan.]

Potentials sources of sediment to stormwater runoff:

- INSERT TEXT HERE
- INSERT TEXT HERE

Potential pollutants and sources, other than sediment, to stormwater runoff:

- INSERT TEXT HERE
- INSERT TEXT HERE

SECTION 2: EROSION AND SEDIMENT CONTROL

2.1 Project Description

1. General Description: Refer to Section 1.3.

2. Schedule: Refer to Section 1.3.

3. Site Data: Refer to Section 1.4.

2.2 Existing Site Conditions: Refer to Sections 1.5, 2.5, 2.6, and 4.1.

2.3 Adjacent Property

[Detailed description of adjacent properties including location]

2.4 Planned Earthwork Activities

1. General Earthwork: [General earthwork description]

2. Off-site Disposal: Any excess or unsuitable material will be transported to off-site disposal areas with erosion control plans that are approved by the authority having jurisdiction. The names of any offsite areas must be provided to the [jurisdiction] before any soil is transported offsite. The depths of topsoil/surficial soil in existing open areas range from approximately [depth] inches.

3. Trenching: Trenching will be performed to install the utilities.

4. Imported Material: Any imported material required for backfilling, stone bases, etc., is planned to be obtained from commercial regional quarries. All off-site land disturbing areas in which material is obtained or is disposed shall have an approved ESC plan.

2.5 Soils

[Add soils description and map and/or reference to soils information in appendices. Refer to http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm]

2.6 Critical Erosion Areas

Critical erosion areas may be encountered during grading operations as follows:

1. Proposed slopes near 3:1 or greater.
2. Drainage swales where surface runoff will be concentrated.

The proposed erosion and sediment control measures are intended to minimize any potential problems and promote stabilization.
[List any known critical erosion areas]

2.7 Erosion and Sediment Control Measures

All vegetative and structural erosion and sediment control practices will be constructed and maintained in accordance with the minimum standards and specifications of the "Virginia Erosion and Sediment Control Handbook" (VESCH), latest edition, as provided in the Appendix.

[Describe the areas that will be disturbed with each phase of construction and the methods (signs, fences, etc.) that you will use to protect those areas that should not be disturbed. Describe natural features identified earlier and how each will be protected during construction activity. Also describe how topsoil will be preserved. Provide a map showing the following information:

a. Areas and timing of soil disturbance and areas that will not be disturbed
b. Natural features to be preserved
c. Locations of major structural and non-structural BMPs identified in the SWPPP
d. Locations and timing of stabilization measures
e. Locations of off-site material, waste, borrow, or equipment storage areas
f. Locations of all waters of the U.S., including wetlands
g. Locations where stormwater discharges to a surface water
h. Locations of storm drain inlets
i. Areas where final stabilization has been accomplished]

2.8 Structural Practices

[EXAMPLES BELOW FOR COMMONLY USED PRACTICES; INSERT APPROPRIATE PROJECT-SPECIFIC PRACTICES AS NEEDED]

1. SAFETY FENCE – STD. & SPEC. 3.01

Safety fence shall be installed as shown on the plans to prohibit the undesirable use of an erosion control measure or land disturbing activity by the public.

Sequence of Installation:	Prior to any land disturbance
Maintenance:	Refer to Std. & Spec 3.01
Removal Event:	Following stabilization of site

2. TEMPORARY STONE CONSTRUCTION ENTRANCE – STD. & SPEC. 3.02

Temporary stone construction entrance shall be installed as shown on the plans to reduce the amount of soil transported onto public roads or other paved areas.

Sequence of Installation:	Prior to any land disturbance
Maintenance:	Refer to Std. & Spec. 3.02
Removal Event:	Immediately prior to paving

3. CONSTRUCTION ROAD STABILIZATION – STD. & SPEC. 3.03

Temporary stabilization with stone shall be installed as shown on the plans for access roads and other traffic areas immediately after grading to reduce erosion caused by vehicles during wet weather, and to prevent having to regrade permanent roadbeds between initial grading and final stabilization.

Sequence of Installation:	Following establishment of subgrade elevation for the access drive and drive aisles
Maintenance:	Refer to Std. & Spec. 3.03
Removal Event:	Prior to placing subbase and pavement

4. STRAW BALE BARRIER – STD. & SPEC. 3.04

Disturbed areas shall be lined with straw bale barriers in locations shown on the plans to detain sediment and decrease storm water runoff velocity

Sequence of Installation:	Prior to any land disturbance
Maintenance:	Refer to Std. & Spec 3.04
Removal Event:	Following permanent stabilization of upstream areas

5. SILT FENCE - STD. & SPEC. 3.05

Disturbed areas and soil stockpile areas shall be lined with silt fence as shown on the plans to detain sediment and decrease storm water runoff velocity.

Sequence of Installation:	Prior to any land disturbance
Maintenance:	Refer to Std. & Spec. 3.05
Removal Event:	Following permanent stabilization of entire site

6. BRUSH BARRIER - STD. & SPEC. 3.06

Disturbed areas shall be lined with brush barriers as shown on the plans to intercept and retain sediment on-site.

Sequence of Installation:	Prior to any land disturbance
Maintenance:	Refer to Std. & Spec 3.06
Removal Event:	Following permanent stabilization of upstream areas

7. STORM DRAIN INLET PROTECTION - STD. & SPEC. 3.07

Storm drain inlet protection shall be placed at existing and proposed grate inlets to prevent sediment from entering the storm piping.

Sequence of Installation:	Existing structures - prior to any land disturbance Future structures – immediately following installation
Maintenance:	Refer to Std. & Spec. 3.07
Removal Event:	Following permanent stabilization of all upland areas

8. CULVERT INLET PROTECTION – STD. & SPEC. 3.08

Culvert inlet protection shall be installed and consist of a sediment filter located at the inlet to storm sewer culverts, which prevents sediment from entering, accumulating in and being transferred by the culvert. It provides erosion control at culverts during the phase of the project where elevations and drainage patterns are changing, causing original control measures to be ineffective.

Sequence of Installation:	Existing structures - prior to any land disturbance Future structures – immediately following installation
Maintenance:	Refer to Std. & Spec. 3.08
Removal Event:	Following permanent stabilization of all upland areas

9. TEMPORARY DIVERSION DIKE - STD. & SPEC. 3.09

Temporary diversion dikes shall be constructed to divert runoff from a disturbed area to a sediment-trapping facility.

Sequence of Installation:	Concurrent with the construction of the sediment traps
Maintenance:	Refer to Std. & Spec. 3.09

Removal Event:	Following permanent stabilization of all upland areas

10. TEMPORARY FILL DIVERSION - STD. & SPEC. 3.10

Temporary fill diversions shall be constructed as shown on the plans to divert runoff along the top of an active earth fill to an appropriate stabilized outlet.

Sequence of Installation:	As needed at the end of each work day at the top of active fill slopes.
Maintenance:	Refer to Std. & Spec. 3.10
Removal Event:	Following permanent stabilization of all upland areas

11. TEMPORARY RIGHT-OF-WAY DIVERSION - STD. & SPEC. 3.11

Temporary right-of-way diversions shall be constructed within a sloping right-of-way to an appropriate stabilized outlet.

Sequence of Installation:	Concurrent with right-of-way grading activities.
Maintenance:	Refer to Std. & Spec. 3.11
Removal Event:	Prior to placing subbase and pavement

12. DIVERSION - STD. & SPEC. 3.12

Diversions shall be constructed as shown on the plans in accordance with design calculations to divert runoff to a stabilized outlet.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.12
Removal Event:	This is permanent and shall not be removed

13. TEMPORARY SEDIMENT TRAP – STD. & SPEC. 3.13

A temporary sediment trap shall be constructed as shown on the plans to detain sediment-laden runoff long enough for the majority of sediment to settle out.

Sequence of Installation:	Prior to any site disturbance and grading activities
Maintenance:	Refer to Std. & Spec. 3.13
Removal Event:	Following permanent stabilization of upland areas

14. TEMPORARY SEDIMENT BASIN – STD. & SPEC. 3.14

A temporary dam with a controlled stormwater release structure formed by constructing an embankment of compacted soil shall be constructed as shown on the plans at the base of a sloping disturbed area to detain sediment-laden runoff from disturbed areas in "wet" and "dry" storage long enough for the majority of the sediment to settle out. Stabilization is required immediately after installation.

Sequence of Installation:	Prior to any site disturbance and grading activities
Maintenance:	Refer to Std. & Spec. 3.14
Removal Event:	Following permanent stabilization of entire site

15. TEMPORARY SLOPE DRAIN – STD. & SPEC. 3.15

Temporary slope drains shall be constructed as shown on the plans to temporarily conduct concentrated stormwater runoff safely down the face of a cut or fill slope without causing erosion on or below the slope.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.15
Removal Event:	Following permanent stabilization of upland and down slope areas.

16. PAVED FLUME – STD. & SPEC. 3.16

A permanent paved channel constructed to conduct stormwater runoff safely down the face of a slope without causing erosion problems on or below the slope.

Sequence of Installation:	Concurrent with the construction of the sediment traps
Maintenance:	Refer to Std. & Spec. 3.16
Removal Event:	This is permanent and shall not be removed.

17. STORMWATER CONVEYANCE CHANNEL (SCC) – STD. & SPEC. 3.17

Permanent SCCs are proposed to provide adequate channel to convey runoff, and shall be constructed in accordance with the plans, specifications, and engineering design calculations.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.17
Removal Event:	This is permanent and shall not be removed.

18. OUTLET PROTECTION – STD. & SPEC. 3.18

Structurally lined aprons or other acceptable energy dissipating devices placed at the outlets of pipes or paved channel sections, used to prevent scour at stormwater outlets, to protect the outlet structure and to minimize the potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows.

Sequence of Installation:	Existing structures - prior to any land disturbance Future structures – immediately following installation
Maintenance:	Refer to Std. & Spec. 3.18
Removal Event:	This is permanent and shall not be removed.

19. RIPRAP – STD. & SPEC. 3.19

Large, loose, angular stone with filter fabric installed to protect soil from the erosive forces of concentrated runoff or stabilize slopes.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.19
Removal Event:	This is permanent and shall not be removed.

20. ROCK CHECK DAMS – STD. & SPEC 3.20

Small temporary stone dams constructed across a swale or drainage ditch in order to reduce the velocity of concentrated stormwater flows, thereby reducing erosion of the swale or ditch and trap sediment from adjacent areas.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.20
Removal Event:	Unless indicated as permanent, remove following permanent stabilization of the site.

21. LEVEL SPREADER – STD. & SPEC 3.21

An outlet for diversions and dikes consisting of an excavated depression constructed at zero grade to convert concentrated runoff to sheet flow and release it uniformly onto areas stabilized by existing vegetation.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.21
Removal Event:	This is permanent and shall not be removed.

22. STRUCTURAL STREAMBANK STABILIZATION – STD. & SPEC 3.23

Structural streambank stabilization should be installed as shown and described on the plans to protect streambanks from the erosive forces of flowing water.

Sequence of Installation:	As part of grading activities
Maintenance:	Refer to Std. & Spec. 3.23
Removal Event:	This is permanent and shall not be removed.

23. TEMPORARY VEHICULAR STREAM CROSSING – STD. & SPEC 3.24

Temporary vehicular stream crossings must be installed whenever more than two (2) crossings (one-way) occur within six months.

Sequence of Installation:	Prior to stream crossing
Maintenance:	Refer to Std. & Spec. 3.24
Removal Event:	After construction is complete and the need to cross the stream is eliminated.

24. UTILITY STREAM CROSSING – STD. & SPEC 3.25

Utility stream crossings should be constructed in accordance with Std. and Spec. 3.25 to help protect sediment from entering the stream during construction and minimize the amount of disturbance.

Sequence of Installation:	As part of utility installation activities
Maintenance:	Refer to Std. & Spec. 3.25
Removal Event:	Following utility installation

25. DEWATERING STRUCTURE – STD. & SPEC. 3.26

A temporary settling and filtering device for water which is discharged from dewatering activities.

Sequence of Installation:	As needed
Maintenance:	Refer to Std. & Spec. 3.26
Removal Event:	After all dewatering has taken place.

26. TURBIDITY CURTAIN – STD. & SPEC. 3.27

A floating geotextile material to minimize sediment transport from a disturbed area adjacent to or within a body of water.

Sequence of Installation:	Prior to upstream land disturbance
Maintenance:	Refer to Std. & Spec. 3.27

Removal Event:	Following permanent upstream stabilization

27. SUBSURFACE DRAIN – STD. & SPEC. 3.28

A perforated conduit such as pipe, tubing or tile installed beneath the ground to intercept and convey ground water.

Sequence of Installation:	As needed with slope grading
Maintenance:	Refer to Std. & Spec. 3.28
Removal Event:	This is permanent and shall not be removed

28. SURFACE ROUGHENING – STD. & SPEC. 3.29

Provide a rough surface with horizontal depressions created by operating a tillage or other suitable implement on the contour, or by leaving slopes in a roughened condition by not fine-grading them.

Sequence of Installation:	As part of grading activities, prior to seeding
Maintenance:	Refer to Std. & Spec. 3.29
Removal Event:	Not Applicable

29. MS-16: UTILITY INSTALLATION

No more than 500 linear feet of utility trench may be opened at one time. Excavated material shall be placed on the uphill side of trenches. Effluent from dewatering operations shall be filtered or passed through approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property. Backfill material shall be properly compacted to minimize erosion and promote stabilization.

2.9 Vegetative Practices

GENERAL: A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized by concrete or pavement. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. New vegetation shall be maintained for one full year after planting. New seeding shall be supplied with adequate moisture, especially late in the season, and in abnormally hot or dry weather. Stabilization practices shall be accomplished in accordance with the appropriate VESCH Std. & Spec. as provided in the Appendix, and the Erosion and Sediment Control Plan. Selection of the appropriate seed mixture for temporary seeding will depend upon the time of year it is applied.

1. VEGETATIVE STREAMBANK STABILIZATION – STD. & SPEC. 3.22

Install vegetation to stabilize stream banks and protect from the erosive forces of flowing water where indicated on the plans.

Sequence of Installation:	Following grading activities
Maintenance:	Refer to Std. & Spec. 3.22; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event:	This is a permanent practice, refer to Std. & Spec. 3.22 for information on required repairs and vegetative establishment.

2. TOPSOILING – STD. & SPEC. 3.30

In order to stabilize final site grades, suitable, organic growth medium shall be used. This can be accomplished through on-site preservation of existing topsoil or imported topsoil.

Sequence of Installation:	Following final grading/surface roughening where applicable.
Maintenance:	Refer to Std. & Spec. 3.30; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event:	This is a permanent practice and shall not be removed.

3. TEMPORARY SEEDING – STD. & SPEC. 3.31

Temporary seeding shall be applied over denuded areas within 7 days for areas that will not be brought to final grade within 30 days. Temporary seeding mixes shall be as described on the detail drawings.

Sequence of Installation:	When cleared areas will not be brought to final grade within 30 days
Maintenance:	Refer to Std. & Spec. 3.31; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event:	As needed for final grading.

4. PERMANENT SEEDING – STD. & SPEC. 3.32

Permanent seeding shall also be used on all areas that are not at final grade and that will be left dormant for a period of more than 1 year. If conflicts exist between the project specifications and the VESCH Std. & Spec. 3.32, the more stringent requirement shall apply. Permanent seeding mixes and rates are found on sheet [XXX] Erosion and Sediment Control Details.

Sequence of Installation:	Within 7 days of achieving final grade or as noted above
Soil Testing Requirements:	Refer to Std. & Spec. 3.32
Maintenance:	Refer to Std. & Spec. 3.32; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be immediately reseeded, following identification of the cause of poor germination.

5. SODDING – STD. & SPEC. 3.33

Sod shall be installed where indicated on the plans in fine-graded areas to establish an immediate permanent turf cover.

Sequence of Installation:	Following establishment of final grade
Maintenance:	Refer to Std. & Spec. 3.33
Removal Event:	This is a permanent practice and should not be removed.

6. BERMUDAGRASS & ZOYSIAGRASS ESTABLISHMENT – STD. & SPEC. 3.34

Bermudagrass & Zoysiagrass shall be planted only where indicated on the plans using plugs, sprigs, or stolons to provide a vegetative ground cover more rapidly than traditional seeding methods.

Sequence of Installation:	Within 7 days of achieving final grade or as noted above
Soil Testing Requirements:	Refer to Std. & Spec. 3.34
Maintenance:	Refer to Std. & Spec. 3.34

7. MULCHING – STD. & SPEC. 3.35

Application of plant residues or other suitable material shall be installed to prevent erosion and foster growth of vegetation to areas which have been seeded or in areas which cannot be seeded because of season to provide some protection to the soil surface.

Sequence of Installation:	Following establishment of final grade and placement of lime, fertilize, and seed or in areas which cannot be seeded because of the season
Maintenance:	Refer to Std. & Spec. 3.35
Removal Event:	not applicable unless used for temporary cover in areas which cannot be seeded because of the season

8. SOIL STABILIZATION BLANKETS AND MATTING – STD. & SPEC. 3.36

Blankets and matting shall be used to aid in controlling erosion on critical areas by providing a microclimate which protects young vegetation and promotes its establishment. In addition, some types of soil stabilization mats are also used to raise the maximum permissible velocity of turf grass stands in channelized areas by "reinforcing the turf" to resist the forces of erosion during storm events.

Sequence of Installation:	Following establishment of final grade and placement of lime, fertilize, and seed.
Maintenance:	Refer to Std. & Spec. 3.36
Removal Event:	This is permanent and shall not be removed.

9. TREES, SHRUBS, VINES, & GROUNDCOVERS – STD. & SPEC. 3.37

Trees, shrubs, vines, and groundcovers shall be planted as indicated on the plans in order to stabilize disturbed areas.

Sequence of Installation:	Following establishment of final grade.
Maintenance:	Refer to Std. & Spec. 3.37
Removal Event:	This is permanent and shall not be removed.

10. TREE PRESERVATION AND PROTECTION – STD. & SPEC. 3.38

Desirable trees shall be protected from mechanical and other injury during land disturbing activity to ensure their survival.

Sequence of Installation:	Prior to any site disturbance and grading activities
Maintenance:	Refer to Std. & Spec. 3.38
Removal Event:	Following permanent stabilization of entire site

11. DUST CONTROL – STD. & SPEC. 3.39

During land disturbance, reduce surface and air movement of dust in areas subject to dust problems in order to prevent soil loss and reduce the presence of potentially harmful airborne substances.

Sequence of Installation:	Immediately as needed to reduce surface and air movement of dust in areas subject to dust problems
Maintenance:	Refer to Std. & Spec. 3.39
Removal Event:	N/A

2.10 Management Strategies

The Contractor will designate an employee certified as the "Responsible Land Disturber" (RLD), by the Commonwealth of Virginia, Department of Environmental Quality (VADEQ), who is in charge of and is responsible for carrying out the land-disturbing activities on this project. This employee shall also inspect for deficiencies immediately after each rainfall, at least daily during prolonged rainfall, and at least weekly when no rainfall occurs. Contractors shall provide written documentation to [Owner] that they meet this requirement prior to [Owner] awarding the construction contract, and [Owner] shall provide the name of the RLD to [Regulatory Authority] and VADEQ prior to land disturbance. In the interim until the work starts, [Interim RLD], [the licensed professional] is the RLD.

1. As first step measures, the construction entrance, silt fence, diversions, temporary sediment traps, temporary sediment basins, and inlet/culvert protection shall be installed as indicated prior to upslope land disturbance. [Modify as appropriate for individual projects]

2. Stabilization measures shall be applied to earthen structures such as diversions immediately after installation. [Modify as appropriate for individual projects]

3. Inlet protection as indicated on the Plan shall be installed for new inlets as they become operational.

4. Stockpiling of soil [is/is not] planned.

5. Gravel stabilization shall be installed on the building pad area and paved areas as soon as the “final” subgrade elevation is obtained.

6. Permanent seeding will be used on all disturbed areas that are not scheduled to receive concrete surfacing, or landscaping (hardwood mulch, etc.).

7. Areas that are not to be disturbed shall be clearly marked by flags, signs, etc.

8. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

2.11 Phased Construction Activities

[Describe the intended construction sequencing and timing of major activities, including grading activities, road and utility installation, and building phases. It may be useful to develop a separate, detailed site map for each phase of construction. Add phases as needed below.]

1. Phase I
    a. Describe phase
    b. Duration of phase (start date, end date)
    c. List BMPs associated with this phase
    d. Describe stabilization methods for this phase (describe any temporary stabilization methods that will be used before final stabilization)
2. Phase 2
    a. Describe phase
    b. Duration of phase (start date, end date)
    c. List BMPs associated with this phase
    d. Describe stabilization methods for this phase (describe any temporary stabilization methods that will be used before final stabilization)
3. Phase 3
    a. Describe phase
    b. Duration of phase (start date, end date)
    c. List BMPs associated with this phase
    d. Describe stabilization methods for this phase (describe any temporary stabilization methods that will be used before final stabilization)

4. After the stabilization of the site is complete, all temporary erosion and sediment control devices will be removed.

2.12 Permanent Stabilization

All areas disturbed by construction shall be stabilized with permanent seeding, landscaping, pavement, or concrete following the final grading.

2.13 Maintenance

1. The contractor shall inspect all erosion control measures immediately after each run-off producing rainfall event, at least daily during prolonged rainfall, at least weekly when no rainfall occurs, and in accordance with the Virginia Stormwater Management Program (VSMP) Permit Regulations. The following areas will be checked in particular:

    a. All devices used at entrances to the storm drain system shall be checked for their performance. If repairs need to be made, they shall be done in a responsible manner.

    b. Sediment shall be removed when the sediment has accumulated to one half the design depth of the barrier. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

    c. All vegetated areas shall be checked regularly to ensure that a good stand is maintained. Areas shall be fertilized and repaired by reseeding as necessary.

2. [Entity responsible for maintenance] personnel will be responsible for maintenance.

Required Certification

The submitted erosion and sediment control narrative (Section 2), including its referenced appendices, and attached plans are complete and meet all applicable requirements to the best of my knowledge.

Licensed Professional Signature / Seal or Applicant	**Date**

SECTION 3: POLLUTION PREVENTION PLAN

3.1 Equipment and Vehicle Washing

[Describe measures to minimize the discharge of pollutants from wash waters.]

3.2 Building Materials/Products, Construction Wastes, Landscape Materials, and/or Other Materials

[Describe construction materials expected to be stored on-site and procedures for storage of materials to minimize exposure of the materials to stormwater.]

3.3 Chemical Spill/Leak Prevention and Control Plan

[Describe the spill prevention and control plan to include ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control.]

3.4 Washout Areas

[Describe location(s) and controls to minimize the potential for stormwater pollution from washout areas for concrete mixers, paint, stucco, etc.]

3.5 Equipment/Vehicle Fueling and Maintenance Practices

[Describe equipment/vehicle fueling and maintenance practices that will be implemented to control pollutants, including but not limited to, fuels, oils, soaps, and solvents, to stormwater (e.g., secondary containment, drip pans, spill kits, etc.).]

3.6 Allowable non-stormwater discharges

[For the allowable non-stormwater discharge(s) associated with construction activity, including dewatering activities, identified, describe controls and measures that will be implemented at those sites to minimize pollutant discharges. This includes irrigation, water related dust control, or other non-stormwater discharges.]

3.7 Material Handling and Waste Management

[Describe measures (i.e., trash disposal, sanitary wastes, recycling, and proper material handling) to prevent the discharge of solid materials to waters of the U.S., except as authorized by a permit issued under section 404 of the CWA.]

3.8 Additional BMPs:

[Describe any additional BMPs that don't fit into the above categories. Indicate the problem they are intended to address.]

SECTION 4: STORMWATER MANAGEMENT

4.1 General Information

1. Existing Conditions: Refer to Sections 1.5, 2.5, 2.6, and 4.1 of this report and refer to Figure [X] showing a map of existing conditions.

   [Provide a map(s) showing the following information.
   a. Topography and Contributing Drainage Areas and patterns;
   b. Existing streams, ponds, culverts, ditches, wetlands, other water bodies, and floodplains;
   c. Soil types, geologic formations if karst features are present in the area, forest cover, and other vegetative areas;
   d. Natural features to be preserved;
   e. Current land use including existing structures, roads, and locations of known utilities and easements; and
   f. Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels.]

2. Proposed Conditions: [Describe the proposed conditions and refer to Figure [X] showing a map of existing conditions.]

   [Provide a map(s) showing the following information.
   a. Proposed grading and Drainage Areas;
   b. The limits of clearing and grading, and the proposed drainage patterns on the site;
   c. Proposed buildings, roads, parking areas, utilities, and stormwater management facilities;
   d. Proposed land use with tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, and easements; and
   e. Identification and location of proposed stormwater facilities and discharges, including description of the surface waters, or karst features, into which the facility will discharge.]

3. Rainfall Values: Rainfall values were based on the VDOT's adoption & implementation of NOAA Atlas 14 rainfall precipitation frequency data. Rational runoff method was utilized to determine peak design flows for the runoff analysis. Rainfall values can be found in [Refer to appendix or table – source: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=va].

4. Time of Concentration: Times of Concentration (Tc) for drainage areas were calculated utilizing the [method]. "Time of Concentration" flow routes are shown on [Figures] and the calculations for Tc are located in [Appendix].

5. Hydrologic Methodology: [Provide description of methodology used]

6. Hydraulic Methodology: [Provide description of methodology used]

7. Pre-Development Analysis

   [Provide a summary table of pre-development drainage areas including area, curve number, and time of concentration]

8. Development Analysis

   [Provide a summary table of development drainage areas including area, curve number, and time of concentration]

4.2 Water Quality Compliance

1. Design Criteria: [provide summary of criteria; example – New Development: 0.41 lbs / acre / year = X.XX total lbs / acre / year of phosphorus removal required]

2. Proposed Best Management Practices (BMPs)
   a. [type]
      i. Location:
      ii. XXX Acres Treated
      iii. X.XX total lbs / acre / year of phosphorus removal provided
   b. [type]
      i. Location:
      ii. XXX Acres Treated
      iii. X.XX total lbs / acre / year of phosphorus removal provided
   c. [type]
      i. Location:
      ii. XXX Acres Treated
      iii. X.XX total lbs / acre / year of phosphorus removal provided
   d. [type]
      i. Location:
      ii. XXX Acres Treated
      iii. X.XX total lbs / acre / year of phosphorus removal provided

3. Compliance - Runoff Reduction Method: Refer to Appendix [X] for the runoff reduction spreadsheet.
   a. Requirement: X.XX total lbs / acre / year of phosphorus removal

b. Provided: X.XX total lbs / acre / year of phosphorus removal
c. Adjusted Runoff Curve Number [Provide a summary table of development drainage areas, size, and adjusted runoff curve number]

4.3 Water Quantity Compliance

[Use adjusted curve numbers from the runoff reduction method in calculations below.]

1. Channel Protection Criteria: [Man-made][Restored][Natural] stormwater conveyance systems. Refer to Appendix [X] for detailed calculations.
    a. $Q_{\text{pre-developed, 1-yr, 24-hr}}$ = XXX cfs
    b. $RV_{\text{pre-developed, 1-yr, 24-hr}}$ = XXX cf
    c. $Q_{\text{developed, 1-yr, 24-hr}}$ = XXX cfs
    d. $RV_{\text{developed, 1-yr, 24-hr}}$ = XXX cf
    e. IF = [0.8][0.9]

2. Flood Protection Criteria: [Man-made][Restored][Natural] stormwater conveyance systems. Refer to Appendix [X] for detailed calculations.
    a. $Q_{\text{pre-developed, 10-yr, 24-hr}}$ = XXX cfs
    b. $Q_{\text{developed, 10-yr, 24-hr}}$ = XXX cfs

3. Proposed Stormwater Management Facilities

    [Provide description of any quantity storage, or explanation as to why none is required]
    a. [type and description]
        i. Location:
        ii. XXX Acres Tributary Drainage Area
        iii. [Description of the surface waters, or karst features, into which the facility will discharge.]
        iv. [Provide a table of pre/post runoff release rates tributary to the facility.]
    b. [type and description]
        i. Location:
        ii. XXX Acres Tributary Drainage Area
        iii. [Description of the surface waters, or karst features, into which the facility will discharge.]
        iv. [Provide a table of pre/post runoff release rates tributary to the facility.]

4.4 Post-Construction Inspections

1. BMP Description: ***<u>INSERT TEXT HERE</u>***

a. Installation Schedule: INSERT TEXT HERE

b. Maintenance and Inspection:

Description	Method	Frequency	Time of year
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

c. Responsible Persons: INSERT TEXT HERE

2. BMP Description: INSERT TEXT HERE

a. Installation Schedule: INSERT TEXT HERE

b. Maintenance and Inspection:

Description	Method	Frequency	Time of year
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

c. Responsible Persons: INSERT TEXT HERE

3. BMP Description: INSERT TEXT HERE

a. Installation Schedule: INSERT TEXT HERE

b. Maintenance and Inspection:

Description	Method	Frequency	Time of year
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

c. Responsible Persons: INSERT TEXT HERE

Required Certification

The submitted stormwater management narrative (Section 4), including its referenced appendices, and attached plans are complete and meet all applicable requirements to the best of my knowledge.

Licensed Professional Signature / Seal or Applicant _____ **Date** _____

SECTION 5: CONSTRUCTION INSPECTIONS and MAINTENANCE

5.1 Inspections

- **Inspection Personnel:**

  Identify the person(s) who will be responsible for conducting inspections and describe their qualifications.

  - INSERT TEXT HERE

- **Inspection Schedule and Procedures:**

  a. Inspections will be conducted at least once every 14 calendar days and within 48 hours following any runoff producing storm event. Where areas have been temporarily stabilized or runoff is unlikely due to winter conditions (e.g., the site is covered with snow or ice, or frozen ground exists) such inspections will be conducted at least once every month.

     - INSERT TEXT HERE

  b. Describe the general procedures for correcting problems when they are identified. Include responsible staff and timeframes for making corrections.

     - INSERT TEXT HERE

  c. Attach a copy of the inspection report you will use for your site.

     - See Appendix E.

5.2 Maintenance of Controls

Table 5.1 – Maintenance Procedures

Schedule Frequency	Actions to be Taken	Persons Responsible
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
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INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE
INSERT TEXT HERE	INSERT TEXT HERE	INSERT TEXT HERE

SECTION 6: TRAINING

Describe Training Conducted:

- General stormwater and BMP awareness training for staff and subcontractors
  INSERT TEXT HERE
- Detailed training for staff and subcontractors with specific stormwater responsibilities
  INSERT TEXT HERE
- Individual(s) Responsible for Training:
  INSERT TEXT HERE

6.1 Pre-Construction Training

Date: mm / dd / yyyy **Start Time:** hh:mm **Finish Time:** hh:mm

Attendees

☐ Locality	Number of attendees: INSERT TEXT HERE
☐ A/E	Number of attendees: INSERT TEXT HERE
☐ Contractor	Number of attendees: INSERT TEXT HERE
☐ Subcontractor(s)	Number of attendees: INSERT TEXT HERE

Subjects Covered

- **Locality** INSERT TEXT HERE

- **Engineer**
  - ☐ ESC/SWM Measures
    - INSERT COMMENTS HERE
  - ☐ BMPs
    - INSERT COMMENTS HERE
  - ☐ Other(s)
    - INSERT COMMENTS HERE

- **Contractor**
  - ☐ Project Sequencing
    - INSERT COMMENTS HERE
  - ☐ Material Handling and Waste Management
    - INSERT COMMENTS HERE

☐ Building Material Staging Area

- INSERT COMMENTS HERE

☐ Washout Areas

- INSERT COMMENTS HERE

☐ Equipment/Vehicle Fueling and Maintenance Areas

- INSERT COMMENTS HERE

☐ Allowable Non-Stormwater Discharges

- INSERT COMMENTS HERE

☐ Spill Prevention

- INSERT COMMENTS HERE

☐ Map of Good Housekeeping BMPs

- INSERT COMMENTS HERE

☐ Other(s)

- INSERT COMMENTS HERE

- **Subcontractor(s)** INSERT TEXT HERE

6.2 Progress Report Meeting

Date: mm / dd / yyyy **Start Time:** hh:mm **Finish Time:** hh:mm

Months to Project Completion: INSERT TEXT HERE

Attendees

☐ Locality Number of attendees: INSERT TEXT HERE

☐ Engineer Number of attendees: INSERT TEXT HERE

☐ Contractor Number of attendees: INSERT TEXT HERE

☐ Subcontractor(s) Number of attendees: INSERT TEXT HERE

Subjects Covered

- **Locality** INSERT TEXT HERE

- **Engineer** ☐ Final Stabilization Measures
  - (Refer to Section 7)

- INSERT COMMENTS HERE

☐ Other(s)

- INSERT COMMENTS HERE

- **Contractor** INSERT TEXT HERE

- **Subcontractor(s)** INSERT TEXT HERE

6.3 Post-Construction Training

Date: mm / dd / yyyy **Start Time:** hh:mm **Finish Time:** hh:mm

Attendees

☐ Locality Number of attendees: INSERT TEXT HERE

☐ Engineer Number of attendees: INSERT TEXT HERE

☐ Contractor Number of attendees: INSERT TEXT HERE

☐ Subcontractor(s) Number of attendees: INSERT TEXT HERE

Subjects Covered

- **Locality** INSERT TEXT HERE

- **Engineer**

☐ Final Stabilization Measures

- (Refer to Section 7)
- INSERT COMMENTS HERE

☐ Post-Construction BMPs

- (Refer to Section 4)
- INSERT COMMENTS HERE

☐ Other(s)

- INSERT COMMENTS HERE

- **Contractor** INSERT TEXT HERE

- **Subcontractor(s)** INSERT TEXT HERE

SECTION 7: FINAL STABILIZATION

- INSERT PROCEDURES FOR FINAL STABILIZATION HERE

APPENDIX J

Erosion Control Notes

Erosion and Sediment Control Plan Notes

An erosion and sediment control program adopted by a district or locality must be consistent with the following minimum standard (MS) criteria, techniques and methods:

MS-1 Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

MS-2 During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The contractor is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as soil intentionally transported from the project site.

MS-3 A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local Authority, is uniform, mature enough to survive and will inhibit erosion.

MS-4 Sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to trap sediment shall be constructed as a first step in any land disturbing activity, and shall be made functional before upslope land disturbance takes place.

MS-5 Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

MS-6 Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

(a) The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

(b) The surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a twenty-five year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

MS-7 Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

MS-8 Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

MS-9 Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

MS-10 All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

MS-11 Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

MS-12 When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.

MS-13 When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of non-erodible material shall be provided.

MS-14 All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

MS-15 The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

MS-16 Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

1. No more than 500 linear feet of trench may be opened at one time.
2. Excavated material shall be placed on the uphill side of trenches.
3. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

4. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
5. Re-stabilization shall be accomplished in accordance with these regulations.
6. Applicable safety regulations shall be complied with.

MS-17 Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual subdivision lots as well as to larger land-disturbing activities.

MS-18 All temporary erosion control measures shall be removed within 30 days after final site stabilization, or after the temporary measures are no longer needed unless otherwise authorized by the VESCP administrator. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

MS-19 Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

1. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
2. Adequacy of all channels and pipes shall be verified in the following manner:
    a) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
        i) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
        ii) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

iii) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

b) If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
   i) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or
   ii) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;
   iii) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
   iv) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

3. The applicant shall provide evidence of permission to make the improvements.
4. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
5. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
6. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
7. All on-site channels must be verified to be adequate.
8. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
9. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
10. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.
11. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements

for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to:

a) Detain the water quality volume and to release it over 48 hours;
b) Detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and
c) Reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 10.1-562 or 10.1-570 of the Act.
d) For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:51 for the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 4VAC50-60-48 of the Virginia Stormwater Management Program (VSMP) permit regulations.
e) Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) permit regulations shall be deemed to satisfy the requirements of minimum standard 19.

APPENDIX K

Virginia Runoff Reduction Method
Compliance Spreadsheets

Virginia Runoff Reduction Method New Development Worksheet -- v2.8 _2011Specs

Site Data

Revised April 2014

Project Name:

Date:

	data input cells
	calculation cells
	constant values

1. Post-Development Project & Land Cover Information

Constants

Annual Rainfall (inches)	43				
Target Rainfall Event (inches)	1.00				
Phosphorus EMC (mg/L)	0.26		Nitrogen EMC (mg/L)	1.86	
Target Phosphorus Target Load (lb/acre/yr)	0.41				
Pj	0.90				

Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00

Rv Coefficients

	A soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Land Cover Summary

Forest/Open Space Cover (acres)	0.00			
Weighted Rv(forest)	0.00			
% Forest	0%			
Managed Turf Cover (acres)	0.00			
Weighted Rv(turf)	0.00			
% Managed Turf	0%			
Impervious Cover (acres)	0.00			
Rv(impervious)	0.95			
% Impervious	0%			
Total Site Area (acres)	0.00			
Site Rv	0.00			
Post-Development Treatment Volume (acre-ft)	0.00			
Post-Development Treatment Volume (cubic feet)	0			
Post_Development Load (TP) (lb/yr)	0.00	Post_Development Load (TN) (lb/yr)		0.00
Total Load (TP) Reduction Required (lb/yr)	0.00			

Drainage Area A

Drainage Area A Land Cover (acres)	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														1. Green Roof				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														2. Impervious Surface Disconnection				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														3. Permeable Pavement				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														4. Grass Channel				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														5. Dry Swale				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														6. Bioretention				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														7. Infiltration				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														8. Extended Detention Pond				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space														9. Sheetflow to Conservation Area or Filter Strip				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00
AREA CHECK OK
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. A (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. A (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														10. Wet Swale (Coastal Plain)				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														11. Filtering Practices				
11.a Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														12. Constructed Wetland				
12.a Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														13. Wet Ponds				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
14. Manufactured BMP															**14. Manufactured BMP**					
	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	
14. Insert Name of Device	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	0.00

Drainage Area B

Drainage Area B Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover By
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area B

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9. Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00

AREA CHECK OK

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. B (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. B (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. B (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. B (lbs/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
14. Manufactured BMP															**14. Manufactured BMP**					
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	
	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK.
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. B (lb/yr)	0.00
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS	
NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	0.00
TOTAL NITROGEN REMOVAL IN D.A. B (lb/yr)	0.00

Drainage Area C

Drainage Area C Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover By
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area C

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9. Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00

AREA CHECK OK

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. C (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. C (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. C (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. C (lbs/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00	
14. Manufactured BMP															**14. Manufactured BMP**					
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	
	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK.
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. C	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. C (lb/yr)	0.00
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS	
NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. C	0.00
TOTAL NITROGEN REMOVAL IN D.A. C (lb/yr)	0.00

Drainage Area D

Drainage Area D Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover By
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area D

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9. Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00

AREA CHECK OK

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. D (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. D (lbs/yr) 0.00

TOTAL RUNOFF REDUCTION IN D.A. D (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. D (lbs/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
14. Manufactured BMP															**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK.
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. D (lb/yr)	0.00
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS	
NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL NITROGEN REMOVAL IN D.A. D (lb/yr)	0.00

Drainage Area E

Drainage Area E Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover By
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area E

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9. Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00

AREA CHECK OK

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. E (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. E (lbs/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. E (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. E (lbs/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.00	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
14. Manufactured BMP															**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to device	0% runoff volume reduction	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK.
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. E	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. E (lb/yr)	0.00
SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS	
NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. E	0.00
TOTAL NITROGEN REMOVAL IN D.A. E (lb/yr)	0.00

Site Results						
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED	0.00	0.00	0.00	0.00	0.00	OK.
TURF AREA	0.00	0.00	0.00	0.00	0.00	OK.
TURF AREA TREATED	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	
Phosphorus						
TOTAL TREATMENT VOLUME (cf)	0					
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	0.00					
RUNOFF REDUCTION (cf)	0					
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	0.00					
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	0.00					
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 0 LB/YEAR!!					
Nitrogen (for information purposes)						
TOTAL TREATMENT VOLUME (cf)	0					
RUNOFF REDUCTION (cf)	0					
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	0.00					
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	0.00					

		1-year storm	2-year storm	10-year storm		
Target Rainfall Event (in)		0.00	0.00	0.00		
Drainage Area A						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area B						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area C						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area D						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area E						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					

Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted $RV_{Developed}$ and adjusted Curve Number.

Drainage Area A		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**100**	**100**	**100**		

Drainage Area B		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**100**	**100**	**100**		

Drainage Area C		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**100**	**100**	**100**		

Drainage Area D		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**100**	**100**	**100**		

Drainage Area E		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	

Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**100**	**100**	**100**		
.						

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Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
					0.00	*0.00*

Site Rv	0.00
Post Development Treatment Volume (ft3)	0
Post Development TP Load (lb/yr)	0.00
Post Development TN Load (lb/yr)	0.00
Total TP Load Reduction Required (lb/yr)	0.00

Total Runoff Volume Reduction (ft^3)	0
Total TP Load Reduction Achieved (lb/yr)	0
Total TN Load Reduction Achieved (lb/yr)	0.00
Adjusted Post Development TP Load (lb/yr)	0.00
Remaining Phosphorous Load Reduction (Lb/yr) Required	0.00

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
						0.00

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	0.00	0.00	0.00	0.00	0.00	*0.00*
TN Load Red. (lb/yr)	0.00	0.00	0.00	0.00	0.00	*0.00*

Channel and Flood Protection

	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		0.00	0.00	0.00
D.A. A CN	0	100	100	100
D.A. B CN	0	100	100	100
D.A. C CN	0	100	100	100
D.A. D CN	0	100	100	100
D.A. E CN	0	100	100	100

Virginia Runoff Reduction Method ReDevelopment Worksheet v2.7 Revised April 2013

Site Data

Project Name:

Date:

	data input cells
	calculation cells
	constant values

Post-ReDevelopment Project & Land Cover Information

Total Disturbed Acreage 0.00

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Phosphorus EMC (mg/L)	0.26
Nitrogen EMC (mg/L)	1.86
Target Phosphorus Target Load (lb/acre/yr)	0.41
Pj	0.90

Pre-ReDevelopment Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00

Post-ReDevelopment Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00
Area Check	Okay	Okay	Okay	Okay	

Rv Coefficients

	A soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Land Cover Summary	**Listed**	**Adjusted[1]**	**Land Cover Summary**		**Land Cover Summary**	
Pre-ReDevelopment			**Post-ReDevelopment**		**Post-ReDevelopment New Impervious**	
Forest/Open Space Cover (acres)	0.00	0.00	Forest/Open Space Cover (acres)	0.00		
Composite Rv(forest)	0.00	0.00	Composite Rv(forest)	0.00		
% Forest	0%	0%	% Forest	0%		
Managed Turf Cover (acres)	0.00	0.00	Managed Turf Cover (acres)	0.00		
Composite Rv(turf)	0.00	0.00	Composite Rv(turf)	0.00		
% Managed Turf	0%	0%	% Managed Turf	0%		
Impervious Cover (acres)	0.00	0.00	ReDev. Impervious Cover (acres)	0.00	New Impervious Cover (acres)	0.00
Rv(impervious)	0.95	0.95	Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	0%	0%	% Impervious	0%	% Impervious	Check Area
Total Site Area (acres)	0.00	0.00	**Total ReDev. Site Area (acres)**	0.00	**Total New Dev. Site Area (acres)**	0.00
Site Rv	0.00	0.00	**ReDev. Site Rv**	0.00	**New Dev. Site Rv**	0.95
Pre-Development Treatment Volume (acre-ft)	0.0000	0.0000	Post-ReDevelopment Treatment Volume (acre-ft)	0.0000	Post-Development Treatment Volume (acre-ft)	0.0000
Pre-Development Treatment Volume (cubic feet)	0	0	Post-ReDevelopment Treatment Volume (cubic feet)	0	Post-Development Treatment Volume (cubic feet)	0
Pre-Development Load (TP) (lb/yr)	0.00	0.00	Post-ReDevelopment Load (TP) (lb/yr)	0.00	Post-Development Load (TP) (lb/yr)	0.00

[1] *Adjusted* **Land Cover Summary** reflects the pre redevelopment land cover minus the pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover. The adjusted total acreage is consistent with the Post Redevelopment acreage (minus the acreage of new impervious cover). The load reduction requriement for the new impervious cover to meet the new development load limit is computed in **Column I**.

Maximum % Reduction Required Below Pre-ReDevelopment Load	10%		
TP Load Reduction Required for Redeveloped Area (lb/yr)	#DIV/0!	**TP Load Reduction Required for New Impervious Area (lb/yr)**	0.00
Total Load Reduction Required (lb/yr)	**#DIV/0!**		
Pre-Development Load (TN) (lb/yr)	0.00	Post-Development Load (TN) (lb/yr)	0.00

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof															**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection															**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
3. Permeable Pavement															**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7	acres of permeable pavement + acres of "external" (ungradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
4. Grass Channel															**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
5. Dry Swale															**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
6. Bioretention															**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
7. Infiltration															**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
8. Extended Detention Pond															**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space															**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00

AREA CHECK OK.

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr) #DIV/0!
TOTAL RUNOFF REDUCTION IN D.A. A (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 0.00

TOTAL RUNOFF REDUCTION IN D.A. A (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Area (excluding areas treated by upstream practices)	Runoff from Upstream RR Practices (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)															**10. Wet Swale (Coastal Plain)**				
	impervious acres draining to wet swale		0.00	0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11. Filtering Practices															**11. Filtering Practices**				
	impervious acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.a Filtering Practice #1 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12. Constructed Wetland															**12. Constructed Wetland**				
	impervious acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00

12.a Constructed Wetland #1 (Spec #13	turf acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #1	turf acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13. Wet Ponds															13. Wet Ponds				
	impervious acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
14. Manufactured BMP															14. Manufactured BMP				
	impervious acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	0.00

Drainage Area B

Drainage Area B Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area B

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof															**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection															**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
3. Permeable Pavement															**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7	acres of permeable pavement + acres of "external" (ungradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
4. Grass Channel															**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
5. Dry Swale															**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
6. Bioretention															**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
7. Infiltration															**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
8. Extended Detention Pond															**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space															**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00
AREA CHECK OK
TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr) #DIV/0!
TOTAL RUNOFF REDUCTION IN D.A. B (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. B (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Area (excluding areas treated by upstream practices)	Runoff from Upstream RR Practices (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)															**10. Wet Swale (Coastal Plain)**				
	impervious acres draining to wet swale		0.00	0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11. Filtering Practices															**11. Filtering Practices**				
	impervious acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.a Filtering Practice #1 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12. Constructed Wetland															**12. Constructed Wetland**				
	impervious acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00

12.a Constructed Wetland #1 (Spec #13	turf acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #1	turf acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13. Wet Ponds															13. Wet Ponds				
	impervious acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
14. Manufactured BMP															14. Manufactured BMP				
	impervious acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. B (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	0.00
TOTAL NITROGEN REMOVAL IN D.A. B (lb/yr)	0.00

Drainage Area C

Drainage Area C Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area C

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof															**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection															**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
3. Permeable Pavement															**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7	acres of permeable pavement + acres of "external" (ungradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
4. Grass Channel															**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
5. Dry Swale															**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
6. Bioretention															**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
7. Infiltration															**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
8. Extended Detention Pond															**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space															**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00
AREA CHECK OK
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr) #DIV/0!
TOTAL RUNOFF REDUCTION IN D.A. C (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. C (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Area (excluding areas treated by upstream practices)	Runoff from Upstream RR Practices (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)															**10. Wet Swale (Coastal Plain)**				
	impervious acres draining to wet swale		0.00	0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11. Filtering Practices															**11. Filtering Practices**				
	impervious acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.a Filtering Practice #1 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12. Constructed Wetland															**12. Constructed Wetland**				
	impervious acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00

12.a Constructed Wetland #1 (Spec #13	turf acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #1	turf acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13. Wet Ponds															13. Wet Ponds				
	impervious acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
14. Manufactured BMP															14. Manufactured BMP				
	impervious acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A.C	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A.C (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A.C	0.00
TOTAL NITROGEN REMOVAL IN D.A.C (lb/yr)	0.00

VDCR

Drainage Area D Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area D

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof															**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection															**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
3. Permeable Pavement															**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
4. Grass Channel															**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
5. Dry Swale															**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
6. Bioretention															**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
7. Infiltration															**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
8. Extended Detention Pond															**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space															**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00
AREA CHECK OK
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr) #DIV/0!
TOTAL RUNOFF REDUCTION IN D.A. D (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. D (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Area (excluding areas treated by upstream practices)	Runoff from Upstream RR Practices (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)															**10. Wet Swale (Coastal Plain)**				
	impervious acres draining to wet swale		0.00	0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11. Filtering Practices															**11. Filtering Practices**				
	impervious acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.a Filtering Practice #1 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12. Constructed Wetland															**12. Constructed Wetland**				
	impervious acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00

12.a Constructed Wetland #1 (Spec #13	turf acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #1	turf acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13. Wet Ponds															13. Wet Ponds				
	impervious acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
14. Manufactured BMP															14. Manufactured BMP				
	impervious acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. D (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL NITROGEN REMOVAL IN D.A. D (lb/yr)	0.00

Drainage Area E

Drainage Area E Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
				Total	0.00	

Post Development Treatment Volume (cf) 0

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area E

Credit	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof															**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection															**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
3. Permeable Pavement															**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7	acres of permeable pavement	75% runoff volume reduction	0.75	0.00	0	0	0	25	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
4. Grass Channel															**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
5. Dry Swale															**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00			25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00			35	0.00	0.00	0.00	0.00
6. Bioretention															**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00			60	0.00	0.00	0.00	0.00
7. Infiltration															**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00
8. Extended Detention Pond															**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.00	0	0	0	15	0.00	0.00	0.00	0.00			10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space															**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00
TOTAL TURF AREA TREATED (ac) 0.00
AREA CHECK OK.
TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr) #DIV/0!
TOTAL RUNOFF REDUCTION IN D.A. E (cf) 0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
TOTAL RUNOFF REDUCTION IN D.A. E (cf) 0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Area (excluding areas treated by upstream practices)	Runoff from Upstream RR Practices (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed		Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)															**10. Wet Swale (Coastal Plain)**				
	impervious acres draining to wet swale		0.00	0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	20	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale			0.00	0.00	0	0	40	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11. Filtering Practices															**11. Filtering Practices**				
	impervious acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.a Filtering Practice #1 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	60	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12. Constructed Wetland															**12. Constructed Wetland**				
	impervious acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00

12.a Constructed Wetland #1 (Spec #13	turf acres draining to wetland			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #1	turf acres draining to wetland			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13. Wet Ponds															13. Wet Ponds				
	impervious acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	50	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	45	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	75	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond			0.00	0.00	0	0	65	0.00	0.00	0.00	0.00			20	0.00	0.00	0.00	0.00
14. Manufactured BMP															14. Manufactured BMP				
	impervious acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device			0.00	0.00	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00
TOTAL TURF AREA TREATED (ac)	0.00
AREA CHECK	OK
PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. E	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. E (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. E	0.00
TOTAL NITROGEN REMOVAL IN D.A. E (lb/yr)	0.00

Site Results						
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED	0.00	0.00	0.00	0.00	0.00	OK.
TURF AREA	0.00	0.00	0.00	0.00	0.00	OK.
TURF AREA TREATED	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	
Phosphorous						
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	#DIV/0!					
RUNOFF REDUCTION (cf)	0					
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	0.00					
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	0.00					
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	#DIV/0!					
Nitrogen (for information purposes)						
RUNOFF REDUCTION (cf)	0					
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	0.00					
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	0.00					

		1-year storm	2-year storm	10-year storm		
Target Rainfall Event (in)		2.70	3.35	5.15		
Drainage Area A						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area B						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area C						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area D						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					
Drainage Area E						
Drainage Area (acres)	0.00					
Runoff Reduction Volume (cf)	0					

Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted $RV_{Developed}$ and adjusted Curve Number.

Drainage Area A		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**#N/A**	**#N/A**	**#N/A**		

Drainage Area B		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**#N/A**	**#N/A**	**#N/A**		

Drainage Area C		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**#N/A**	**#N/A**	**#N/A**		

Drainage Area D		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
	Adjusted CN	**#N/A**	**#N/A**	**#N/A**		

Drainage Area E		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	

Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed		Area (acres)	0.00	0.00	0.00	0.00	
		CN	39	61	74	80	
Impervious Cover		Area (acres)	0.00	0.00	0.00	0.00	
		CN	98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
		$RV_{Developed}$ (in) with no Runoff Reduction	0.00	0.00	0.00		
		$RV_{Developed}$ (in) with Runoff Reduction	0.00	0.00	0.00		
		Adjusted CN	**#N/A**	**#N/A**	**#N/A**		
.							

Virginia Runoff Reduction Method ReDevelopment Worksheet v2.7 Revised April 2013

Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
					0.00	*0.00*

Site Rv	#DIV/0!
Post Development Treatment Volume (ft^3)	0
Post Development TP Load (lb/yr)	0.00
Post Development TN Load (lb/yr)	0.00
Total TP Load Reduction Required (lb/yr)	#DIV/0!

Total Runoff Volume Reduction (ft^3)	0
Total TP Load Reduction Achieved (lb/yr)	0
Total TN Load Reduction Achieved (lb/yr)	0.00
Adjusted Post Development TP Load (lb/yr)	0.00
Remaining Phosphorous Load Reduction (Lb/yr) Required	0.00

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Impervious (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
						0.00

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	0.00	0.00	0.00	0.00	0.00	*0.00*
TN Load Red. (lb/yr)	0.00	0.00	0.00	0.00	0.00	*0.00*

Channel and Flood Protection

	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		2.70	3.35	5.15
D.A. A CN	0	#N/A	#N/A	#N/A
D.A. B CN	0	#N/A	#N/A	#N/A
D.A. C CN	0	#N/A	#N/A	#N/A
D.A. D CN	0	#N/A	#N/A	#N/A
D.A. E CN	0	#N/A	#N/A	#N/A

APPENDIX L

Long-Term Stormwater Management Facility Maintenance Agreement

LONG-TERM STORMWATER MANAGEMENT FACILITY MAINTENANCE AGREEMENT

VSMP/Stormwater Permit #:_____

TAX PARCEL NUMBER: _____

THIS AGREEMENT, made and entered into this ____ day of _____, 20_____, by and between, _____, Grantor, hereinafter called the "Owner," whose legal address is _____, and Campbell County, Virginia, a political subdivision of the Commonwealth of Virginia, acting by and through its **Board of Supervisors**, Grantee, hereinafter called the **"Campbell County,"** whose legal address is P.O. Box 100, Rustburg VA 24588.

WITNESSETH:

WHEREAS, _____ is the Owner of that certain parcel of land lying and being in the _____ [Magisterial District of Campbell County, Virginia], identified as Tax Parcel #_____, being of record in the [Clerk's Office of the Circuit County of Campbell County, Virginia], in Deed Book ____ at Page ____ or Deed Instrument No._____, referred to herein as the "Property," which Property is briefly described as follows: _____ _____**;**

WHEREAS, Owner desires the approval of an Erosion and Sediment Control and Stormwater Management Plan (Plan File #_____), referred to as the "Plan," for erosion and sediment control and stormwater management measures and facilities, as required by Campbell County, a copy of which Plan is attached hereto and which is expressly incorporated by reference herein; and

WHEREAS, the Plan provides for a stormwater management facility(ies) and other drainage conveyance channels or permanent erosion and sediment control measures and improvements within the confines of the Property, referred to as the "Facilities"; and

WHEREAS, Campbell County and the Owner agree that the health, safety, and general welfare of the residents of Campbell County, Virginia require that on-site stormwater management

Facilities as shown on the Plan be constructed on the Property by the Owner and adequately maintained by the Owner;

NOW, THEREFORE, in consideration of the foregoing Property, the mutual benefits and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. The on-site stormwater management Facilities shall be constructed by the Owner in accordance with the attached Plan and specifications, and, upon completion of construction of such Facilities Owner shall provide a construction record drawing as required by §62.1-44.15 of the Code of Virginia.

2. The Owner shall maintain the Facilities in accordance with the maintenance procedures shown on the attached Plan to assure good working order acceptable to Campbell County. Such maintenance procedures shall meet or exceed those maintenance requirements set forth in the Stormwater Management Ordinance of the Campbell County.

3.
    a. The Owner identifies _____as the person responsible *for performing* the required maintenance of the Facilities. The street address and telephone number where such person may be contacted are: _____; (___) ___-____.

    b. Owner hereby acknowledges that identification of such person shall not be deemed to relieve Owner, its administrators, executors, assigns, heirs, and any other successors in interest of its/their ultimate responsibilities under the provisions of this Agreement or under the pertinent provisions of [local code] or applicable statutes or regulations.

    c. Owner further agrees to provide written notification to Campbell County of the name, address, and telephone number of any person whom Owner may identify subsequently as the person responsible *for performing* required maintenance.

4. The Owner shall inspect the Facilities in accordance with and within the timeframes provided in the requirements set forth in the Stormwater Management Ordinance of Campbell County. The Owner shall provide a copy of the inspection report in accordance

to the inspection schedule to Campbell County within 30 calendar days of the required inspection date.

5. The Owner hereby grants permission to Campbell County, its authorized agents and employees to enter upon the Property and to inspect the Facilities upon providing Owner ten (10) calendar days written notice by first class mail. Such notice requirement may be waived or modified by agreement between the Owner and the Campbell County. Such right of access will *allow* Campbell County to inspect the facility, but Campbell County is under no obligation to conduct periodic inspections. Defects or deficiencies discovered during any such inspection shall be documented and specific measures to be taken to remedy such defect or deficiency shall be described in writing, a copy of which shall be provided to Owner. Owner agrees to perform promptly all needed maintenance and correct defects and/or deficiencies reported to it by Campbell County. Such defects and/or deficiencies shall be corrected within a reasonable period of time as determined between Owner and Campbell County, but such period shall not exceed fifteen (15) calendar days.

6. Owner further agrees to waive the notice requirement specified in Paragraph 5 above when the Campbell County determines that an immediate inspection of the Facilities is necessary due to threat of imminent danger to life or property or other emergency. The Campbell County, or its agents, may enter immediately upon the Property and take whatever reasonable steps it deems necessary to mitigate the danger or emergency. Campbell County shall notify the Owner of such entrance as soon as possible but in no event later than twenty-four (24) hours after such entry. Alternatively, Campbell County may notify the Owner by telephone to take necessary action within a specified time period. Should Owner fail to respond, or should Owner inform Campbell County that it does not intend to act with the specified time period, then Campbell County, or its agents, may enter immediately upon the Property and take whatever reasonable steps it deems necessary to mitigate the danger or emergency.

7. In the event of notice being required under Paragraph 5 above or any other provision of this Agreement, such notice shall be deemed to have been given when put in writing and deposited in the U. S. Mail (first class mail with postage prepaid) to the following:

If to the Owner:

Name of person: _____ OR

Name of entity if a corporation, partnership, etc.: _____

Name of officer AND title if a corporation, partnership, etc.: _____

Address: _____

Telephone Number: _____

If to Campbell County:

[LOCALITY ADMINISTRATOR]

[LOCALITY ADDRESS]

Owner further agrees to notify Campbell County in writing at the above address immediately upon any change in legal status, address, or telephone number of Owner.

8. In the event the Owner fails to maintain the Facilities, as shown on the attached Plan, in good working order acceptable to Campbell County, or to promptly correct defects and/or deficiencies reported to it by Campbell County within the prescribed time period, Campbell County may enter upon the Property after notice as required in Paragraph 5 above and take whatever steps it deems necessary to maintain said Facilities. This provision shall not be construed to allow Campbell County to erect any structure of a permanent nature on the land of the Owner without first obtaining written approval of the Owner. It is expressly understood and agreed that Campbell County is under no obligation to maintain or repair said Facilities, and in no event shall this Agreement be construed to impose any such obligations on Campbell County.

9. In the event Campbell County, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Owner, its administrators, executors, assigns, heirs, and any other successors in interest shall reimburse Campbell County upon demand, within thirty (30) calendar days of receipt thereof for all costs incurred by Campbell County hereunder.

10. Notwithstanding the above-mentioned remedies, Owner and Campbell County acknowledge that Campbell County may take such other additional enforcement actions as are set forth in Chapter 12 in the Campbell County Code.

11. It is the intent of this Agreement to ensure the proper maintenance of onsite Facilities by the Owner; provided, however, that this Agreement shall not be deemed to create or

affect any additional liability of any party for damage alleged to result from or be caused by stormwater damage.

12. The Owner, its executors, administrators, assigns, heirs, and other successors of interest shall indemnify and hold Campbell County and its agents and employees harmless for any and all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against Campbell County from the construction and/or maintenance of the described onsite Facilities by the Owner or Campbell County.

    In the event a claim is asserted against Campbell County, its agents or employees, the Campbell County shall promptly notify the Owner and the Owner shall defend, at its own expense, any suit based on such claim. If any judgment or claim against Campbell County, its agents or employees shall be allowed, the Owner shall pay all costs and expenses in connection therewith.

13. Campbell County shall not pay any compensation to Owner, its administrators, executors, assigns, heirs, or any other successors in interest at any time for its use of the Property in any way necessary for the inspection and maintenance of the Facilities, including access to the Facilities.

14. This Agreement shall be governed by the laws of the Commonwealth of Virginia.

15. Plans and specifications for stormwater management facilities and measures to be undertaken on the subject property shall be attached hereto and are hereby incorporated by reference as a part of this Agreement.

16. This Agreement shall be recorded among the land records in the Clerk's Office of Campbell County, Virginia, and shall constitute a covenant running with the land, and shall be binding on the Owner, its administrators, executors, assigns, heirs, and any other successors in interest.

17. Such covenant running with the land shall be described in full or incorporated by reference into each deed of conveyance out of the described Property, and such covenant shall be noted on any subsequently recorded plat of subdivision or re-subdivision of Property.

IN WITNESS WHEREOF, _____, Owner, has affixed his signature and seal; **OR IN WITNESS WHEREOF**, _____, a Virginia Corporation, pursuant to a Resolution duly adopted on the ____ day of _____, 20____, has caused this instrument to be executed by _____, its _____, on behalf of the Corporation; and

IN FURTHER WITNESS WHEREOF, the BOARD OF SUPERVISORS of Campbell County, VIRGINIA, has caused this instrument to be executed by [NAME], [TITLE], on behalf of the BOARD OF SUPERVISORS, of Campbell County, VIRGINIA.

[Signature] _____(SEAL)

[Print Name] _____

OR

[Name of corporation, partnership] _____

[Signature of Officer] By: _____(SEAL)

[Print name of officer and his title] _____

THE BOARD OF SUPERVISORS OF Campbell County, VIRGINIA

By: _____ (SEAL)

[NAME], [TITLE]

COMMONWEALTH OF VIRGINIA,
CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this _____ day of _____, 20__, by _____, Owner.

(SEAL) _____

Notary Public

My commission expires: _____.

OR

COMMONWEALTH OF VIRGINIA,
CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this _____ day of _____, 20__, by _____ [name of officer], _____ [name of office held] of _____ [name of corporation], a Virginia corporation, on behalf of the Corporation, **Owner**.

(SEAL) _____
Notary Public

My commission expires: _____.

COMMONWEALTH OF VIRGINIA,
Campbell County, to-wit:

The foregoing instrument was acknowledged before me this _____ day of _____, 20__, by [NAME], [TITLE] for Campbell County, Virginia, on behalf of the BOARD OF SUPERVISORS of Campbell County, VIRGINIA.

(SEAL) _____

Notary Public

My commission expires: _____.

[A resolution, or a certified copy thereof, authorizing a designated officer of the corporation or other entity to execute this Agreement on behalf of the corporation or other entity shall be attached to this Agreement and recorded with said Agreement in the Clerk's Office of the Circuit Court of Campbell County, Virginia.]

RESOLUTION

I, _____, the duly elected and qualified Secretary of _____, a Virginia Corporation duly organized, validly existing and in good standing under the laws of Virginia, hereby certify that at a legally convened meeting of the Board of Directors of _____, duly called and held on the _____ day of _____, 20 __, the following Resolution was duly adopted in accordance with the articles of incorporation and bylaws of _____, and is now in full force and effect:

> BE IT RESOLVED by the Board of Directors of _____, a Virginia Corporation, that the _____ [specify office], _____ [name of officer], of this Corporation is authorized to execute, acknowledge, and deliver on behalf of the Corporation any deed or other instrument conveying or encumbering land, or interest therein, including but not limited to a Stormwater Management Facility Maintenance Agreement by and between the Corporation and the Campbell County, Virginia, or granting any easement or right-of-way over land owned by the Corporation.
>
> BE IT FURTHER RESOLVED that the Secretary of the Corporation shall attach to such deed or other instrument a copy of this Resolution by the Board of Directors authorizing the above-named officer of the Corporation to execute, acknowledge, and deliver such deed or instrument on behalf of the Corporation.

I further certify that _____ is the duly elected and acting _____ [specify office] of the Corporation and, as such, has the authority to perform the powers listed above.

IN WITNESS WHEREOF, I have hereunto subscribed my name hereto as Secretary of _____, on the ____day of _____, 20__.

[Name of Corporation] _____

[Signature of Corporate Secretary] _____ (SEAL)

[Print name of Secretary] _____, Secretary

APPENDIX M

Erosion and Sediment Control and
Stormwater Management Facility (BMP)
Bond Calculator

EROSION AND SEDIMENT CONTROL BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

VESC Std.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
3.01	Safety Fence	LF	$18.00	0	$0.00
3.02	Temporary Gravel Construction Entrance	EA	$985.00	0	$0.00
	with Wash Rack	EA	$3,400.00	0	$0.00
3.03	Construction Road Stabilization	SY	$5.00	0	$0.00
3.04	Straw Bale Barrier	LF	$3.75	0	$0.00
3.05	Silt Fence (SF)	LF	$3.75	0	$0.00
3.06	Brush Barrier	LF	$2.00	0	$0.00
3.07	Storm Drain Inlet Protection (IP)	EA	$135.00	0	$0.00
3.08	Culvert Inlet Protection (CIP)	EA	$190.00	0	$0.00
3.09	Temporary Diversion Dike	LF	$5.20	0	$0.00
3.10	Temporary Fill Diversion	LF	$2.00	0	$0.00
3.11	Temporary Right of Way Diversion	LF	$2.40	0	$0.00
3.12	Diversion (DV)	LF	$7.00	0	$0.00
3.13	Temporary Sediment Trap (ST)				
	1 acre	EA	$1,250.00	0	$0.00
	2 acres	EA	$2,100.00	0	$0.00
	3 acres	EA	$2,300.00	0	$0.00
3.14	Temporary Sediment Basin (SB)				
	3 to 5.9 Acre Drainage Area	EA	$3,000.00	0	$0.00
	6 to 14.9 Acre Drainage Area	EA	$6,000.00	0	$0.00
	15 Acre Drainage Area	EA	$9,200.00	0	$0.00
3.15	Temporary Slope Drain	LF	$5.75	0	$0.00
3.16	Paved Flume	SY	$52.00	0	$0.00
3.17	Stormwater Conveyance Channel				
	Seeded	SY	$10.00	0	$0.00
	Sodded	SY	$20.00	0	$0.00
	Temporary Matting	SY	$30.00	0	$0.00
	Permanent Matting	SY	$40.00	0	$0.00
	Riprap	SY	$60.00	0	$0.00
3.18	Outlet Protection (OP)	EA	$175.00	0	$0.00
	Riprap	SY	$60.00	0	$0.00
	Grouted Riprap	SY	$60.00	0	$0.00
	Concrete	SY	$45.00	0	$0.00
3.19	Riprap	TN	$20.00	0	$0.00
3.20	Rock Check Dams (CD)	EA	$165.00	0	$0.00
3.21	Level Spreader	SY	$10.00	0	$0.00
3.22	Vegetative Streambank Stabilization	SY	$350.00	0	$0.00
3.23	Structural Streambank Stabilization	LF	$17.00	0	$0.00
3.24	Temporary Vehicular Stream Crossing	EA	$2,500.00	0	$0.00
3.25	Utility Stream Crossing	EA	$1,800.00	0	$0.00
3.26	Dewatering Structure	LF	$3.00	0	$0.00
3.27	Turbidity Curtain	LF	$16.00	0	$0.00
3.28	Subsurface Drain	LF	$50.00	0	$0.00
3.29	Surface Roughening	SF	$0.25	0	$0.00
3.30	Topsoiling	AC	$1,500.00	0	$0.00

EROSION AND SEDIMENT CONTROL BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

VESC Std.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
3.31	Temporary Seeding	AC	$1,875.00	0	$0.00
3.32	Permanent Seeding	AC	$2,250.00	0	$0.00
3.33	Sodding	SY	$5.00	0	$0.00
3.34	Bermudagrass and Zoysiagrass Establishment	SY	$7.50	0	$0.00
3.35	Mulching	AC	$3,750.00	0	$0.00
3.36	Soil Stabilization Blankets and Matting	LF	$2.50	0	$0.00
3.37	Trees, Shrubs, Vines, and Ground Cover	SY	$25.00	0	$0.00
3.38	Tree Preservation and Protection	LF	$9.00	0	$0.00
3.39	Dust Control	LS	$500.00	0	$0.00

ESC BOND	***$0.00***
25% Contingency	*$0.00*
Total ESC Bond	**$0.00**

STORMWATER MANAGEMENT FACILITY (BMP) BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

Practice No.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
1	**Rooftop Disconnection**				
	Down Spout	LF	$5.00	0	$0.00
	Roof Drain	LF	$20.00	0	$0.00
	Turf Reinforcement (EC-2)	SY	$3.00	0	$0.00
	Turf Reinforcement (EC-3)	SY	$8.00	0	$0.00
				Sub-total:	**$0.00**
2	**Sheetflow to Vegetated Filter and Conserved Open Space**				
	Flow Bypass Structure	EA	$2,000.00	0	$0.00
	#57 Stone	TN	$50.00	0	$0.00
	#3 Stone	TN	$25.00	0	$0.00
	Level Spreader	LF	$15.00	0	$0.00
	Underdrain (for level spreader)	LF	$20.00	0	$0.00
	Concrete Footer (for level spreader)	CY	$350.00	0	$0.00
	Treated Timbers (6"x6")	LF	$7.50	0	$0.00
	Jute / Excelsior mesh	SY	$1.60	0	$0.00
	Gravel	CY	$125.00	0	$0.00
	Filter Fabric	SY	$2.81	0	$0.00
	Seeding	SY	$2.10	0	$0.00
	Plants / Shrubs	SF	$2.50	0	$0.00
	Trees	EA	$1,000.00	0	$0.00
	PB - Excavated Soil (for permeable berm)	CY	$10.00	0	$0.00
	Sand	TN	$45.00	0	$0.00
	#8 Pea Gravel	TON	$35.00	0	$0.00
	Geotextile	SY	$2.50	0	$0.00
				Sub-total:	**$0.00**
3	**Grass Channel**				
	Seeding	SY	$2.10	0	$0.00
	Check Dam	EA	$300.00	0	$0.00
	Excavation & Embankment	CY	$6.00	0	$0.00
	Lining (for gravel flow spreader)	SY	$2.50	0	$0.00
	E&SC Netting / Mats (E&SC spec 3.36)	SY	$3.00	0	$0.00
				Sub-total:	**$0.00**
4	**Soil Amendments**				
	Compost	CY	$90.00	0	$0.00
	Seeding	SY	$2.10	0	$0.00
	Undercut	CY	$6.00	0	$0.00
				Sub-total:	**$0.00**
5	**Vegetated Roof**				
	Extensive Green Roof (installed)	SF	$10.00	0	$0.00
	Intensive Green Roof (installed)	SF	$25.00	0	$0.00
				Sub-total:	**$0.00**

STORMWATER MANAGEMENT FACILITY (BMP) BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

Practice No.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
6	**Rainwater Harvesting**				
	Storage Tank	GAL	$3.00	0	$0.00
	Excavation	CY	$6.00	0	$0.00
	Pump	EA	$4,000.00	0	$0.00
	Booster Pump	EA	$2,000.00	0	$0.00
	Concrete Base	CY	$400.00	0	$0.00
	Valves, Backflow Preventers, Piping	LS	$4,000.00	0	$0.00
				Sub-total:	**$0.00**
7	**Permeable Pavement**				
	Excavation/Embankment (Subgrade Prep)	CY	$6.00	0	$0.00
	Pervious Concrete	SF	$8.20	0	$0.00
	Porous Asphalt	TN	$100.00	0	$0.00
	Stone Layer/Bedding Material	TN	$50.00	0	$0.00
	Interlocking Concrete Pavers	SY	$45.00	0	$0.00
	Filter Fabric (polypropylene)	SY	$2.50	0	$0.00
	Underdrain (perforated)	LF	$20.00	0	$0.00
	Drop Inlet	EA	$3,500.00	0	$0.00
	Observation well (PVC pipe)	LF	$20.00	0	$0.00
	Impermeable Liner (30 mil, PVC, geomembrane)	SY	$5.00	0	$0.00
				Sub-total:	**$0.00**
8	**Infiltration**				
	Flow Splitter	EA	$3,000.00	0	$0.00
	Topsoil	CY	$40.00	0	$0.00
	Sand Layer	CY	$45.00	0	$0.00
	Sod	SF	$1.50	0	$0.00
	Aggregate	TN	$50.00	0	$0.00
	Filter Fabric (polypropylene geotextile)	SY	$2.50	0	$0.00
	4" PVC Cleanout	LF	$20.00	0	$0.00
				Sub-total:	**$0.00**
9	**Bioretention**				
	Filter Media	CY	$90.00	0	$0.00
	Excavation	CY	$6.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Stone Layer	TN	$50.00	0	$0.00
	6" Underdrain (schedule 40 PVC with cleanouts)	LF	$20.00	0	$0.00
	Turf	SF	$1.50	0	$0.00
	Plants / Shrubs	SF	$2.50	0	$0.00
	Hardwood Mulch (shredded, aged bark)	SY	$5.00	0	$0.00
	Impermeable Liner (30 mil, PVC, geomembrane)	SY	$5.00	0	$0.00
	Outlet Pipe	LF	$75.00	0	$0.00
	Outlet Structure	EA	$5,000.00	0	$0.00
				Sub-total:	**$0.00**

STORMWATER MANAGEMENT FACILITY (BMP) BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

Practice No.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
10	**Dry Swale**				
	Filter Media	CY	$90.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Excavation	CY	$6.00	0	$0.00
	6" Underdrain (schedule 40 PVC with cleanouts)	LF	$20.00	0	$0.00
	Check Dam	EA	$300.00	0	$0.00
	Turf	SF	$1.50	0	$0.00
	Plants / Shrubs	SF	$2.50	0	$0.00
	Hardwood Mulch (shredded, aged bark)	SY	$5.00	0	$0.00
	Impermeable Liner (30 mil, PVC, geomembrane)	SY	$5.00	0	$0.00
	Outlet Structure	EA	$5,000.00	0	$0.00
				Sub-total:	**$0.00**
11	**Wet Swale**				
	Excavation	CY	$6.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Plants / Shrubs	SF	$2.50	0	$0.00
	Turf	SF	$1.50	0	$0.00
	Check Dam	EA	$300.00	0	$0.00
				Sub-total:	**$0.00**
12	**Filtering Practice**				
	Filter Media	CY	$90.00	0	$0.00
	Excavation	CY	$6.00	0	$0.00
	Stone Layer	TN	$50.00	0	$0.00
	6" Underdrain (schedule 40 PVC with cleanouts)	LF	$20.00	0	$0.00
	Turf	SF	$1.50	0	$0.00
	Medium Aggregate Concrete Sand	TN	$45.00	0	$0.00
	Underdrain/Cleanouts	LF	$20.00	0	$0.00
	Outlet Pipe	LF	$75.00	0	$0.00
	Outlet Structure	EA	$5,000.00	0	$0.00
				Sub-total:	**$0.00**
13	**Constructed Wetland**				
	Outfall/Outlet Structure	EA	$5,000.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Outlet Pipe	LF	$75.00	0	$0.00
	Excavation & Embankment	CY	$6.00	0	$0.00
	Plants/Shrubs	SF	$3.00	0	$0.00
	Low Flow Pipe	LF	$65.00	0	$0.00
				Sub-total:	**$0.00**

STORMWATER MANAGEMENT FACILITY (BMP) BOND CALCULATOR

Project: _____ Disturbed Acreage: _____

Date: _____

Practice No.	DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST
14	**Wet Pond**				
	Riser (w/ anti-flotation, anti-vortex, and trash rack devices)	EA	$5,000.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Pond Aeration	EA	$4,000.00	0	$0.00
	Plants/Shrubs	SF	$3.00	0	$0.00
	Outlet Pipe	LF	$75.00	0	$0.00
	Outlet Protection (riprap over filter fabric)	EA	$300.00	0	$0.00
	Low Flow Pipe	LF	$65.00	0	$0.00
	Concrete Weir	CY	$400.00	0	$0.00
	Liner	SY	$5.00	0	$0.00
				Sub-total:	**$0.00**
15	**Extended Detention Pond**				
	Excavation & Embankment	CY	$6.00	0	$0.00
	Riprap	SY	$90.00	0	$0.00
	Pond Aeration	EA	$4,000.00	0	$0.00
	Plants/Shrubs	SF	$3.00	0	$0.00
	Outlet Pipe	LF	$75.00	0	$0.00
	Outlet Protection (riprap over filter fabric)	EA	$300.00	0	$0.00
	Outlet Structure	EA	$5,000.00	0	$0.00
				Sub-total:	**$0.00**
				SWM BMP BOND	***$0.00***
				25% Contingency	*$0.00*
				Total SWM BMP Bond	**$0.00**

APPENDIX N

VSMP Permit & SWPPP Construction
Inspection Report Form

VSMP PERMIT & SWPPP CONSTRUCTION INSPECTION REPORT

Project Name: _____ VSMP Permit Number: _____

Project Address: _____ County/City: _____

Project Operator: _____ Operator Telephone: _____

Operator Address: _____ County/City: _____

Inspector Name: _____ Inspection Date: _____ Time: _____

Inspector Phone No: _____

Legal Status:

☐ Federal ☐ State ☐ Public ☐ Private

Nature of Project:

☐ Commercial ☐ Industrial ☐ Residential ☐ Road ☐ Utility ☐ Agriculture ☐ Other:

Stage of Construction:

☐ Pre-Con Conference ☐ Clearing & Grubbing ☐ Rough Grading ☐ Building Construction

☐ Finish Grading ☐ Final Stabilization ☐ Construction of SWM BMPs ☐ Other:

☐ Maintenance of SWM BMPs

ITEM	General Information	YES	NO	N/A	Recommended Corrective Action and Notes
1	Project has permit coverage to discharge stormwater: §62.144.15:26				
2	Permit application submitted: 9VAC25-880-50				
3	Project's coverage letter posted near the site's entrance				
4	Internet address for viewing of SWPPP or the location of the SWPPP including name & telephone number of the contact person posted				
5	SWPPP has been prepared: 9VAC25-880-50				
6	SWPPP on-site or made available during the inspection				
7	SWPPP signed in accordance with the regulations				
8	SWPPP being amended (maintained) and updated				
9	SWPPP revisions signed and dated				
10	Prior to commencing construction, the operator obtained an approved ESC plan or agreement in lieu of a plan: 9VAC25-880-30				
ITEM	SWPPP Content	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	Registration Statement for the project				

2	Copy of the Construction General Permit				
3	Description & nature of project				
4	Sequence & timing of land-disturbance activities				
5	Record of dates when major grading activities occurred				
6	Record of dates when grading temporarily or permanently ceased				
7	Record of dates when stabilization measures are initiated				
8	Estimate of total land-disturbance area including off-site areas				
9	Description of potential pollution sources (fuel, chemical storage, sanitary waste facilities, etc.)				
10	Identification of nearest receiving waters that will receive discharges from the project				
11	Location & description of industrial activity discharges covered by this permit such as dedicated asphalt & concrete plants				
12	Detailed site map identifying location of the project and receiving waters:				
13	Site map indicating the following:				
	1. Direction of final storm flows & slopes				
	2. Areas of disturbed & undisturbed sites				
	3. Location of controls				
	4. Location of stabilization practices				

	5. Location of surface water including wetlands				
	6. Location of stormwater discharges				
	7. Location of any off-site, waste, storage, and borrow areas				
	8. Location of potential pollutant sources				
	9. Areas of final stabilization				
ITEM	Controls to Minimize Pollutants	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	Description of control measures to be implemented to minimize pollutants				
2	Identifies the contractor or subcontractor that will implement and maintain each control measure				
3	Approved ESC plan: Plans may be referenced in the SWPPP but need to be available at the time of inspection since they are enforceable under the permit.				
4	All control measures required by the ESC plan are designed, installed and maintained in accordance with good engineering practices and minimum standards of the VESCL (§62.1-44.15 0 et seq.) and regulations (9VAC25-840)				
5	All control measures properly selected, installed and maintained in accordance with good engineering practices and where applicable manufacturer specifications				
6	Paved or public roads cleaned as required				
7	Control measures replaced or modified as soon as practicable if periodic inspections or other information indicated a control measure has been used inappropriately or incorrectly				
8	Plans ensure existing vegetation preserved if possible & all disturbed portions stabilized				
9	Sediment escapes are removed at a frequency sufficient to minimize offsite impacts				
10	All control measures properly selected, installed and maintained.				

11	Litter exposed to stormwater is controlled from becoming a pollutant source				
12	Includes all necessary calculations describing post-construction stormwater management measures to address quantity and/or quality that will be installed				
13	Post-construction stormwater management measures are designed and installed in accordance with applicable local, state and federal requirements				
14	If applicable, the following required information about participation in a Regional Stormwater Management Plan				
	a. Type of regional facility to which the site contributes				
	b. Geographic location of facility (including city/county & HUC)				
	c. Geographic location of the site (including city/county & HUC)				
	d. Number of acres treated by regional facility				
15	If applicable the following information about Nutrient Offset				
	a. Name of broker from which offsets will be acquired				
	b. Geographic location of offset generating facility (city/county & HUC)				
	c. Number of offsets to be acquired (lbs/acre/year)				
	d. Nutrient reductions to be achieved onsite (lbs/acre/year)				
16	Discharge from stormwater facilities or conveyance systems are to an adequate channel in accordance with VESCR (9VAC25-30)				
17	Description of control measures to prevent discharge of solid materials to state water				
18	Description of control measures to comply with state or local waste disposal, sanitary sewer or septic system regulations				
19	Description of construction and waste materials expected to be stored onsite with updates, including measure to minimize exposure of materials to stormwater, and for spill prevention and response				

20	Description of pollutant sources from areas other than construction (dedicated asphalt or concrete plants) and control measures to be used at those sites				
21	Control measures implemented at the site are consistent with applicable state, local and federal requirements for ESC & SW management				
ITEM	Maintenance of Controls	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	Control measures properly maintained in effective operating condition in accordance with good engineering practices and, where applicable, manufacturer specifications				
2	Maintenance performed as soon as practical on control measures identified by inspections that are not operating effectively				
3	If site inspections required to identify existing control measures needed to be modified or if additional control measures were necessary for any reason, implementation was completed before the next anticipated storm event. If implementation before the next anticipated storm event was impracticable, the situation was documented in the SWPPP and alternative control measures were implemented as soon as practicable				
ITEM	Inspections	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	Name & phone of the "Qualified Personnel" conducting inspections				
2	Inspections conducted at required frequency				
3	Inspections include all areas of the site disturbed, off-site areas covered by the permit, areas used for storage that are exposed to precipitation, control measures for proper installation, maintenance and operation, discharge locations where accessible, and downstream locations where discharge locations are not accessible				
4	For utility, pipeline, highway construction, representative inspections (For representative inspections, personnel must inspect control measures 0.25 miles above and below each point where access is allowed and points must be listed in the report.)				
5	Inspection reports are part of the SWPPP				
6	Inspection reports summarize the scope of the inspections including corrective actions				
	(1) The location(s) of discharges of sediment or other pollutants from the site				

	(2) Location(s) of control measures that need to be maintained				
	(3) Location(s) of control measures that failed to operate as designed or proved inadequate for a particular location				
	(4) Location(s) where additional control measures are needed that did not exist at the time of inspection				
	(5) Corrective action required including any changes to the SWPPP that are necessary and implementation dates				
	(6) An estimate of the amount of rainfall at the construction site (in inches) from the runoff producing storm event requiring the inspection, or if inspecting on a seven-day schedule, the amount of rainfall (in inches) since the previous inspection				
	(7) Weather information and a description of any discharges occurring at the time of inspection				
ITEM	Non-Stormwater Discharges	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	Identification of allowable non-stormwater discharges and control measures for the non-stormwater discharges				
	a. Fire fighting controls				
	b. Fire hydrant flushing				
	c. Vehicle washing (no detergent)				
	d. Water used for dust control				
	e. Potable water source & uncontaminated flushing				
	f. Building washing (no detergent)				
	g. Pavement washwaters (no hazardous materials or detergent used on pavement)				
	h. Air conditioner or compressor condensation is uncontaminated				
	i. Uncontaminated ground water or springs				

	j. Foundation or footing drains				
	k. Uncontaminated excavation dewatering				
	l. Landscape irrigation				
ITEM	Total Maximum Daily Loads and Impaired Waters	YES	NO	N/**A**	Recommended **Corrective Action and Notes**
1	TMDL WLA for the construction activity identified				
2	Description of strategies and control measures implemented to meet TMDL WLAs				
3	Impaired waters identified as having impairments for pollutants that may be discharged from the construction activity				
4	Control measure protective of water quality standards for impaired waters identified as having impairments for pollutants that may be discharged from the construction activity				
5	Appears to be impact(s) to receiving waters {Provide location(s) & description of impact(s).}				

Recommended Corrective Action Deadline Date: _____ Re-inspection Date: _____

The recommended corrective action deadline date applies to all conditions noted on this report unless otherwise noted. If listed condition(s) currently constitute non-compliance and/or corrective actions are not completed by the deadline, other enforcement actions may be issued to the entity responsible for ensuring compliance on the above project.

Inspector
Signature _____ Date _____

Acknowledgement
Of on-site receipt: _____ Date _____
Signature

_____
Printed Name

APPENDIX O

Construction Record Drawing Checklist for Permanent Stormwater Management Facilities (BMPs)

Construction Record Drawing Checklist
for Permanent Stormwater Management Facilities (BMPs)

Record drawings are required for all components of permanent stormwater management facilities (BMPs). The record drawings shall be appropriately sealed and signed by a Professional engineer, architect, surveyor, or landscape architect registered in the Commonwealth of Virginia pursuant to Article 1 (§ 54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia, unless waived by the VSMP Authority in conjunction with an agreement-in-lieu of stormwater management plan. The record drawings shall:

☐ Be of the same sheet size; format, scale, etc. as the approved stormwater management plans;

☐ Show the as-built condition of the stormwater management facility(ies) calling attention to any changes from the approved drawings;

☐ Provide details, including, but not limited to, elevations for structure tops, pipe inverts, channels, outfalls; cross-sections; structure and pipe sizes/types; and other sensitive components of the facility(ies);

☐ Show lot lines, numbers, street names, and maintenance access easement information;

☐ Provide a benchmark with description;

☐ Include maintenance information should also be provided on the plan; and

☐ Contain a Certification statement that all permanent stormwater management facilities have been constructed and are functioning in accordance with the approved plans.

Construction Record Drawing Checklist for
Project Name: _____

SWPPP Dated: _____
Plans Dated: _____
Submittal Number: _____

APPENDIX P

VSMP Project Completion Form

VSMP Project Completion Form

Project Name: _____ Date: _____

Tax / Parcel No(s): _____ Date of Approved Plans: _____

VSMP/Stormwater Permit Number: _____

☐ Has the project been built in conformance with the approved plans? (If no, provide a written explanation.)

☐ Have the stormwater conveyance system(s) and facility (ies), including, but not limited to BMPs, culverts, storm sewers, channels, etc., been installed in conformance with the approved plans?

☐ Have all storm structures and sewers been sealed/bricked and mortared and inverts been poured?

☐ Are all the storm sewer structures and pipes/channels clean?

☐ Have the inlet and/or outlet protection(s) been installed as shown on the approved plans?

☐ Have all disturbed areas been properly stabilized with a minimum of 70% vegetative cover and 100% vegetative cover over areas upstream of stormwater BMPs?

☐Has a construction record drawing for each permanent stormwater management facility been submitted to the Administrator for stormwater management facilities requiring a maintenance agreement(s)? The construction record drawing shall be appropriately sealed and signed by a professional registered in the Commonwealth of Virginia, certifying that the stormwater management facilities have been constructed in accordance with the approved plan. (This is required to release the financial guarantee.)

Applicant's Contact Information

Name: _____ Email: _____

Address: _____ Phone: _____

Administrative Use Only

Inspection Date: _____ ☐ Project conforms to plans

Financial Guarantee Release Date: _____ ☐ Project eligible for release

Approved

_____

[Local Administrator]

APPENDIX Q

Post-Construction Inspection

Post-Construction Inspection Checklist

For:

Insert Project Name
Insert Project Site Location/Address
Insert City, State, Zip Code
Insert Project Site Telephone Number (if applicable)

Table of Contents

1 - ROOFTOP DISCONNECTION: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Piping, Gutters, Drains and Pre-Treatment Sumps	Fluid from a different practice is being piped near pervious areas.				Prevent adjacent uses from piping through or around pervious area.	Professional	
	Sediment and debris accumulation				Correct the source of sediment and debris and remove it immediately	Owner or professional	
	Mosquito proliferation				Correct gutter flow to eliminate standing water; treat for mosquitoes, as needed	Owner or professional	
	Runoff is not entering the receiving pervious area.				Check to see if connection spout or overflow pipe is clogged. Remove the sediment.	Owner or professional	
	The downspouts remain disconnected.				Restore disconnection.	Owner or professional	
Manufactured Products	Product or component is broken or not functioning correctly.				Follow the manufacturer's maintenance recommendations, and repair or replace as needed.	Owner or professional	
Downstream Treatment	The compensatory treatment units have not been maintained.				Correct identified problems, according to the maintenance guidelines for the specific supplementary BMP.	Owner or professional	
	Stormwater discharge is ponding at point of disconnection.				Dry wells or french drains may be needed, if not already present. Clean out manually, and reconstruct or replace when no longer functioning.	Professional	
	Erosion is evident at the simple disconnection, bioretention/rain gardens, filter paths, or foundation planter.				Remove the sediment and debris build-up at the points where runoff enters the pervious area. Then re- stabilize.	Owner or professional	
	Practices to which the disconnection discharges are not functioning.				Reference that practice's checklist for instructions to fix problems.	Professional	
	Practices to which the disconnection discharges are disturbed or have been converted.				Correct identified problems and stabilize as needed.	Owner or professional	
	The receiving pervious area(s) retain dimensions as shown on plans and are in good condition.				Restore dimensions and make needed repairs.	Owner or professional	
	There is encroachment on the receiving pervious area(s) or easement by buildings or other structures.				Inform involved property owners of BMPs status; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

2 - SHEET FLOW TO VEGETATED FILTER AREAS AND CONSERVED OPEN SPACE: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Ideally, these BMP areas should be inspected annually, with the inspection conducted during the non-growing season when it is easier to observe the flow path. Once established, vegetated filter strips have minimal maintenance needs outside of the Spring cleanup: regular mowing, repair of check dams and other measures to maintain the hydraulic efficiency of the filter strip and a dense, healthy grass cover. Grass filter strips and boundary zones must be mowed at least twice a year to prevent woody growth. A conservation easement may be required to ensure that the vegetated filter strip area and any newly established or restored forest cover may not be cleared. Also, a responsible party should ensure that routine forest improvements are made over time (i.e., thinning, invasive plant removal, etc.).

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil.				Stabilize immediately.	Owner or professional	
Inlet	Inlets provide stable conveyance into facility.				Stabilize immediately, as needed.	Owner or professional	
	Excessive trash / debris / sediment accumulation at the inlet				Remove trash and debris immediately.	Owner	
	Evidence of erosion at / around the inlet				Correct the source problem and stabilize immediately.	Owner or professional	
Channel	Scour and erosion are present within the vegetated filter area				Sediments are to be cleaned out of Level Spreader forebays and flow splitters	Owner or professional	
	Debris and sediment build-up is present at the top of the vegetated filter area.				Check conveyance(s) to the filter area for trouble spots and correct any problems immediately. Manually remove the deposited sediment.	Owner or professional	
Gravel Diaphragm	Foot or vehicular traffic is compromising the gravel diaphragm.				Block foot and vehicular traffic. Re-stabilize the area immediately.	Professional	
Level Spreader	The level spreader is performing properly. Flows are not concentrating on the down- gradient side of the element				Search the spreader for chips, cracks, or any other fundamental compromise of the structure. Repair immediately.	Professional	
	There is excessive landscape waste and yard clippings.				Remove immediately.	Owner or professional	
Vegetation	Vegetative density is less than 90% cover in the boundary zone or grass filter.				Reseed and fertilize (if necessary) the exposed soil.	Owner or professional	
	The plant composition is consistent with the approved plans.				Make a judgment regarding whether plants need to be replaced, and replace if necessary.	Professional	
	Invasive species or weeds are present				Correctly destroy and/or remove the invasive species; make a judgment regarding whether other weeds need to be removed, and remove if necessary.	Owner or professional	
	There is troublesome pest infestation.				Use integrated pest management (IPM) techniques to minimize the use of pesticides and herbicides. Minimize use of organic (not chemical) fertilizer, as needed.	Owner or professional	
	There is dead vegetation and/or exposed soil.				Reseed or replace dead vegetation on exposed soil Areas.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overflow Area	Flows through the filter area short-circuit the overflow control section				Check that the structure is not clogged. If so, manually clean out debris immediately.	Owner or professional	
Outlet	The outlet provides stable conveyance away from the filter area.				Stabilize immediately, as needed.	Professional	
Overall	There is adequate access to the level spreader and filter area.				Establish adequate access.	Professional	
	There is evidence of standing water.				Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
	There is excessive trash and debris.	.			Remove immediately.	Owner or Professional	
	Mosquito proliferation				Eliminate stangant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Complaints from local residents				Correct real problems	Owner or professional	
	Encroachment on the filter area or easement by buildings/structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

3 - GRASS CHANNELS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Type of pretreatment facility:

☐Sediment ☐Forebay ☐Dam

☐Grass ☐Filter ☐Strip

☐Stone ☐Diaphragm

Other: _____

None: _____

Ideally, these BMP areas should be inspected annually, with the inspection conducted spring when the health of the grass channel lining should be evident. Once established, Grass Channels have minimal maintenance needs outside of the Spring cleanup: regular mowing, repair of check dams and other measures to maintain the hydraulic efficiency of the channel and a dense, healthy grass cover.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
Pre-treatment	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash / debris / sediment in the facility				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is evidence of diaphragm or other clogging.				Identify and eliminate the source of the problem; . If necessary, remove and clean or replace the stone.	Professional	
	There is dead vegetation and evidence of erosion and / or exposed soil.				Repair erosion damage, and reseed or otherwise restabilize with vegetation.	Owner or professional	
Inlets	The inlet is not maintaining a calm flow of water entering the channel or the conveyance capacity is blocked.				Remove trash and sediment accumulated at the inflow. Sources of sediment and debris must be identified and corrected. Stone splash pads must be replenished to prevent erosion.	Owner or professional	
	There is evidence of erosion at / around Inlet.				Repair erosion damage, and reseed or otherwise restabilize with vegetation.	Owner or professional	
Vegetation	Native soil is exposed or erosion channels are forming.				If sediment deposits are thick enough to damage or kill vegetation, remove the sediment by hand, while protecting the vegetation.	Owner or Professional	
	Grass height does not reach standards				Grass channels must be mowed to keep grass at a height of 4" to 9". Remove grass clippings after mowing.	Owner or Professional	
	Vegetation requires fertilizer or pest control				Fertilize according to specifications. Use organic rather than chemical fertilizer. If feasible, use compost. Use integrated pest management (IPM) techniques to minimize the use of pesticides and herbicides.	Owner or Professional	
	The plant composition is consistent with the approved plans.				Make a judgment regarding whether plants need to be replaced, and replace if necessary	Professional	
	Invasive species or weeds are present				Correctly destroy and/or remove the invasive species; make a judgment regarding whether other weeds need to be removed, and remove if necessary.	Owner or professional	
	There is dead vegetation and/or exposed soil.				Reseed or replace dead vegetation and exposed soil areas.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Side Slopes	Evidence of erosion on side slopes, introducing sediment into the swale.				Repair erosion damage immediately. Stabilize slopes using appropriate erosion control measures and plant appropriate vegetation.	Owner or Professional	
Check Dams	Dam is not functioning properly.				Check upstream and downstream sides of check dams for evidence of undercutting, side cutting or erosion and repair immediately.	Professional	
	There is a large accumulation of sediment or trash/debris behind the check dam.				Remove sediment when the accumulation exceeds 25% of the original Tv. Remove trash/debris and clear blockages of weep holes.	Professional	
Channel Bottom	Undesirable plant species, accumulations of fallen leaves, and other debris from deciduous plant foliage are present.				Remove woody vegetation from the channel. Prune adjacent trees and shrubs to keep the channel clear. Remove/replace invasive veg. or weeds if they cover < 25% of the channel area. Remove accumulated organic matter and debris immediately.	Owner or Professional	
	Base soils are compacted. The practice does not draw down within 48 hours after a storm.				De-thatch and aerate the channel. Remove sediment when the accumulation exceeds 25% of channel volume. Restore the original cross section and revegetate the channel.	Owner or Professional	
	There is unhealthy or dead grass cover or evidence of erosion, braiding, or excessive ponding in the channel bottom.				Fill in low spots, repair erosion, and add reinforcement planting to maintain 90% turf cover. Reseed any salt killed vegetation and stabilize immediately. Keep the grass in a healthy, vigorous condition at all times, since it is the primary erosion protection for the channel.	Owner or Professional	
Channel Outlet	The outlet does not maintain sheet flow of				The source of erosion damage must be identified and controlled when native soil is exposed or erosion channels		
	The outlet provides stable conveyance out of the channel.				Stabilize immediately, as needed.	Professional	
	There is excessive trash, debris or sediment accumulation at outlet.				Check inflow points for cogging and remove any trash and sediment deposits	Owner or professional	
	There is dead vegetation and/or exposed soil.				Reseed or replace dead vegetation and exposed soil areas	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Pest Control	There is evidence of standing water and mosquito habitat or rodent damage.				Pest control measures must be taken when mosquitoes and/or rodents are found to be present. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*. Holes in the ground located in and around the swale must be filled and stabilized with vegetation. Burrowing animals should be humanely removed from the area.	Professional	
Overall	Access to the Grass Channel is adequate				Establish adequate access	Professional and, perhaps, the locality	
	Complaints from local residents				Correct real problems	Owner or professional	
	Encroachment by buildings or other structures				Clearly mark BMP and inform those involved of the BMPs.	Owner, professional (and perhaps the locality)	

4 - SOIL COMPOST AMENDMENTS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Ideally, the amended soil area should be watered once every 3 days for the first month, and then weekly during the first growing season (April-October), depending upon rainfall. The area should be inspected at least after each storm event that exceeds 1/2-inch of rainfall during the first six months following the incorporation of soil amendments. Depending on the results of a soil test for the amended area, a one- time spot fertilization may be needed in the fall after the first growing season to increase plant vigor. The area should be de-thatched every few years to increase permeability.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately with grass cover.	Owner or professional	
	Evidence of excessive use of fertilizer or lawn chemicals				Develop and implement a nutrient and pest control management plan.	Owner or professional	
	Runoff is ponding, creating rills, and/or causing erosion.				Dethatch or aerate the soil. Introduce more compost amendments and/or lime. Restabilize eroded areas by replanting vegetation.	Owner or professional	
	Access to the amended soil area for maintenance is adequate.				Establish adequate access.	Professional	
	Absence of signs designating the area as a Conservation Area				Obtain or create and post appropriate signage.	Owner (and perhaps the locality)	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	Encroachment on the amended area or easement by buildings or other structures.				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	
NOTE: Soil compost amendments do not need to be addressed in a maintenance agreement if they are incorporated to reduce lawn runoff volume or improve a residential rooftop disconnection. They probably should be addressed in a simple maintenance agreement if the soil restoration/improvement is associated with more than 10,000 square feet of reforestation. Soil compost amendments within a vegetated filter strip or grass channel should be located in a public right of way or within a dedicated stormwater or drainage easement.							

5 - VEGETATED ROOFS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Ideally, following construction, this practice should be inspected monthly during the vegetation establishment period, and then every six months thereafter to assess the state of vegetative cover and to look for leaks, drainage problems and other functional or structural concerns. Maintenance may include watering, hand-weeding to remove invasive or volunteer plants, and to add plant materials to repair bare areas. The use of herbicides, insecticides, fungicides, and fertilizers should be avoided, since their presence could hasten degradation of the waterproof membrane. Also, power-washing and other exterior maintenance operations should be avoided so that cleaning agents and other chemicals do not harm the vegetated roof plant communities.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Vegetation	Plant cover is less 90% plant cover.				During establishment period, replace dead plants as needed. During the long-term period, dead plants must generally be replaced once per year in the fall.	Owner or professional	
	Plants are wilting				Water more frequently to promote growth and survival. Annual application of slow-release fertilizer is recommended in the fall during the first five years following installation. After that, fertilizer is generally not necessary and should not be applied.	Owner or professional	
	Plants are choking on excess vegetation				Fallen leaves and debris from deciduous plant foliage must be removed and should be recycled or composted.	Owner or professional	
	Invasive and nuisance plant species are present				Completely remove invasive plant species. Weeding must be done by hand, without the use of herbicides or pesticides. Remove weeds regularly and do not allow them to accumulate.	Owner or professional	
	Drought conditions are present				Mulch or shade cloth may be applied to prevent excess solar damage and water loss.	Professional	
	There is troublesome pest infestation.				Use integrated pest management (IPM) techniques to minimize the use of pesticides and herbicides. Minimize use of organic (not chemical) fertilizer, as needed.	Owner or professional	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	Grass has become unruly				Grass should be mowed as needed. Clippings must be removed and should be recycled or composted.	Owner or professional	
Vegetation Irrigation	During the establishment period (initial 1-3 years)				Water sufficiently to assure plant establishment, but do not exceed 1/4-inch of water once every 3 days.	Owner or professional	
	During the long-term period (3+ years)				Water sufficiently to maintain plant cover, but do not exceed 1/4-inch of water once every 14 days. For automatic sprinklers, use manufacturers' instructions for operation and maintenance.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Structural Components	Waterproof membrane is leaking or cracked				Make necessary repairs immediately.	Professional	
	Root barrier is perforated				Replace swatch.	Professional	
Drainage Layer/Inlet Pipes	Soil substrate, vegetation, debris, litter or other materials clog the roof drain inlet, scuppers or gutters				Sources of organic matter, debris, litter, and other sediment must be identified and materials removed to prevent clogging drainage structures.	Professional	
	Drain inlet pipe is in poor condition				Repair as needed.	Professional	
Soil Substrate/ Growing Medium	Evidence of erosion from wind or water				If erosion channels are evident, they must be stabilized with additional soil substrate/growth medium and covered with additional plants.	Professional	
	Growth media has become clogged with sediment				Manually remove sediment so as not to damage plant materials.	Professional	
Overall	Access to the vegetated roof is adequate.				Egress and ingress routes must be restored to design standards. Walkways must be clear of obstructions and maintained to design standards.	Professional	
	There is evidence of damage or vandalism.				Maintain the vegetated roof's aesthetics as an asset to the property owner and community.	Owner or professional	
	Mosquitoes or other insects are breeding/ abundant at the practice				Standing water creating an environment for development of insect larvae must be eliminated manually. Chemical sprays must not be used.	Owner or professional	
	Threat of a spill is imminent.				Spill prevention measures must be exercised for mechanical systems located on roofs when substances that can contaminate stormwater are used. Releases of pollutants must be corrected as soon as they are identified.	Owner or professional	

6 - RAINWATER HARVESTING: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Ideally, this practice should be inspected each Spring and Fall by the owner, with an extensive inspection every three years by a qualified third party inspector.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (*Every third year*)	A component of the system is leaking or damaged.				Make necessary repairs or replace damaged components.	Professional	
	Water is flowing out of the overflow pipe during the design rainfall or smaller storm (1-1.5 inch).				Check for clogging or damage and ensure the pump is operating correctly. Ensure water is being used at the volume for which the system was designed.	Owner or professional	
	Electric system is flawed.				Make any necessary repairs/adjustments.	Professional	
	Sediment accumulation in cistern exceeds 5% of the design volume				Remove sediment.	Professional	
	Excessive overhanging vegetation/trees present				Trim branches back to meet standards	Professional	
Captured roof area (*Twice a year*)	Excess debris/sediment on the rooftop				Remove debris immediately.	Owner or professional	
Gutter system (*Twice a year*)	Gutters are clogged and water is backed up.				Unclog/remove leaves and debris. May need to install gutter screens.	Owner or professional	
	Rooftop runoff is not reaching the gutter system.				Correct the positioning or installation of gutters. May need to replace the system	Owner or professional	
	Algae growth				Do not allow sunlight to penetrate cistern. Treat the water to remove/prevent algae	Owner or professional	
	Mosquitoes are present in the cistern.				Check screens for damage and repair/ replace. Treat with mosquito dunks if necessary.	Owner or professional	
	Lids are damaged. Be sure to check vents and screens on inflow and outflow spigots and mosquito screens.				Repair immediately. Ensure that lid damage has not led to any of the aforementioned problems with the cistern.	Owner or professional	
Screens and filters (*Twice a year*)	Debris/sediment accumulation. Screens are clogged.				Find the source of debris and sediment and remedy. Clear the screen/filter. Replace if necessary	Professional	
Pump (*Twice a year*)	Not operating properly				Check for clogging. Flush if needed. May need to be replaced.	Professional	
Pre-screening devices and first flush devices (*Every 3 months*)	Dirty/clogged				Have a professional ensure screens have not caused bacterial growth within the gutters or downspouts. The owner may remove the clean out plug from the first flush device and manually wipe it clean.	Owner or Professional	
Backflow preventer (*Every third year*)	Pressure is uneven and is causing backpressure or back-siphonage.				Immediately stop use of the indoor water supplied by the tank and call a professional.	Professional	
Secondary water supply (*Every third year*)	Not operating properly				Consult an expert only.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overflow pipe (*Annually*)	Erosion is evident at overflow discharge point, along the filter path/secondary runoff reduction practices.				Stabilize immediately. It may be necessary to refer to inspection checklists for other BMPs.	Professional	
	Overflow pipe in poor condition				Repair or replace pipe.	Professional	

7 - PERMEABLE PAVEMENT: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Ideally, each permeable pavement installation should be inspected in the Spring of each year, especially at large-scale installations.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There is excessive landscape waste and yard clippings.				Remove immediately.	Owner or professional	
Adjacent Vegetation	Trees and shrubs are within 5 feet of the pavement surface				Check that tree roots have not penetrated the pavement and leaf residue has not clogged the pavement. Vegetation that limits access or interferes with the permeable pavement operation must be pruned or removed.	Owner or Professional	
Inlets, Pre-Treatment Cells and Flow Diversion Structures	There is excessive trash, debris or sediment accumulation.				Remove immediately.	Owner or Professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	Evidence of clogging				Clean out sediment or debris. Remove and wash or replace stone, as needed.	Professional	
Pavement Surface	Mosquito proliferation				Eliminate standing water and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then use a licensed pest controller to apply an approved mosquito larvicide *(only if absolutely necessary).*	Owner or professional	
Pavement Surface	There is evidence of erosion and / or bare or exposed soil in grid paver areas.				Stabilize immediately. Mow, irrigate and apply organic (not chemical) fertilizer, as needed to keep grass healthy and dense enough to provide filtering while protecting the underlying soil. Remove any grass clippings.	Owner or professional	
	There is loose material (e.g., bark, sand, etc.) stored on the pavement surface				Remove immediately and vacuum or sweep the area to prevent clogging the pavement pores.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Pavement Surface (continued)	Pavement is stained and/or clogged or water is ponded, indicating the pavement is not draining properly. Measure the drawdown rate in the observation well for three (3) days following a storm event that exceeds 1/2-inch of rain. If standing water is still observed in the well after three days, this is a clear sign that the pavement is clogged. Significant amounts of sediment have accumulated between the pavers.				The surface must be kept clean and free of leaves, debris, and sediment by vacuum sweeping (without brooms or water spray) immediately and, otherwise, at a frequency consistent with the use and loadings encountered (at a minimum, annual dry-weather sweeping in the Spring). Where paving blocks are installed, the sweeper must be calibrated so it does *not* pick up the stones between the paver blocks. Following the vacuum sweeping, test pavement sections by pouring water from 5 gallon buckets, to ensure proper drainage.	Professional	
Structural Integrity	There is evidence of surface deteriortation, such as slumping, cracking, spalling or broken pavers.				Repair or replace affected areas, as necessary.	Professional	
Observation Wells	Is each observation well still capped?				Repair, as necessary.	Professional	
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

8 - INFILTRATION PRACTICES: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Facility Location:	Hydraulic Configuration:
☐ Surface	☐ On-line facility
☐ Underground	☐ Off-line facility
Filtration Media:	Type of Pre-Treatment Facility:
☐ No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.	☐ Sediment forebay (above ground)
☐ Sand	☐ Sedimentation chamber
☐ Bioretention Soil	☐ Plunge pool
☐ Peat	☐ Stone diaphragm
☐ Other:	☐ Grass filter strip
	☐ Grass channel
	☐ Other:

Ideally, infiltration facilities should be inspected annually. Spill prevention measures should be used around infiltration facilities when handling substances that contaminate stormwater. Releases of pollutants should be corrected as soon as identified.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	Vegetative cover is adequate				Supplement as needed.	Owner or professional	
	There are excessive landscape waste or yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment Facility	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or exposed soil.				Stabilize immediately.	Owner or professional	
	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation).				Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Professional	
	There is dead vegetation or exposed soil in the grass filter.				Restabilize and revegetate as necessary.	Owner or professional	
Inlets	Inlets provide a stable conveyance into facility				Stabilize immediately, as needed.	Owner or professional	
	There is excessive trash/debris/sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion at or around the inlet.				Repair erosion damage and reseed or otherwise restabilize with vegetation.	Owner or professional	
Embankment, Flow Diversion Structures (e.g., Dikes, Berms, etc.) and Side Slopes	There is evidence of erosion or bare soil.				Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation.	Owner or professional	
	There is excess sediment accumulation.				Remove immediately.	Owner or professional	
	Water is not detained in the infiltration basin.				Check for a breach in the containment structure and repair immediately.	Professional	
	Side slopes support nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area.	Professional	
Maintaining Facility Capacity and Proper Drainage	Look for weedy growth on the stone surface indicating sediment accumulation and potential clogging				Identify and control sources of sediment and debris.Remove sediment and debris in excess of 4” in depth every 2-5 years (or sooner if performance is affected).	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Maintaining Facility Capacity and Proper Drainage (continued)	Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. If standing water is still observed after three days, this is a clear sign that clogging is a problem.				Immediately clear debris from the underdrain. Replace the underdrain if necessary. If needed, regrade and till to restore infiltration capacity (the need for this can be prevented by preventing upstream erosion and subsequent sediment transport to the facility).	Professional	
	There is excessive trash/debris.				Remove immediately.	Owner or professional	
Vegetation	Grass within the practice is overgrown.				Grass must be mowed to a height of 4"-9" and grass clippings removed (ideally recycled or composted).	Owner or professional	
	Pioneer trees are sprouting in the base of the facility.				Remove trees to prevent roots from puncturing the filter fabric, allowing sediment to enter.		
	Vegetation forms an overhead canopy that may drop leaf litter, fruit and other vegetative materials that may cause clogging.				Prune or remove vegetation as necessary.	Owner or professional	
Observation Well	Is each observation well still capped?				Repair, as necessary.	Professional	
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	
	Evidence of flow bypassing facility				Repair immediately	Professional	
	There is excessive trash, debris, or sediment at the outlet.				Remove immediately	Owner or professional	
Overflow or Emergency Spillway	The pipe or spillway is not effectively conveying excess water to an adequate receiving system.				Clear sediment and debris whenever 25% or more of the conveyance capacity is blocked. When damaged pipe is discovered, it must be repaired or replaced immediately. Identify and control sources of erosion damage. Replace or reinforce stone armament whenever only one layer of stone remains.	Professional	
Structural Components	Evidence of structural deterioration				Repair as necessary.	Professional	
	Evidence of spalling or cracking of structural components				Repair or replace, as necessary.	Professional	
	Grates are in good condition				Repair or replace, as Necessary.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall	Access to the Infiltration facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that manholes, valves and/or locks can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water.				Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
Overall (continued)	Mosquito proliferation				Eliminate standing water and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Complaints from local residents				Correct real problems.	Owner or professional	
	Encroachment on the infiltration area or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

9 - BIORETENTION PRACTICES: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Facility Location:	Hydraulic Configuration:
☐ Surface	☐ On-line facility
☐ Underground	☐ Off-line facility
Filtration Media:	Type of Pre-Treatment Facility:
☐ No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.	☐ Sediment forebay (above ground)
☐ Sand	☐ Sedimentation chamber
☐ Bioretention Soil	☐ Plunge pool
☐ Peat	☐ Stone diaphragm
☐ Other:	☐ Grass filter strip
	☐ Grass channel
	☐ Other:

Ideally, Bioretention facilities should be inspected and cleaned up annually, preferably during the Spring. During the first 6 months following construction of a bioretention facility, the site should be inspected at least twice after storm events that exceed 1/2-inch of rainfall. Watering is needed once a week during the first 2 months following installation, and then as needed during the first growing season (April-October), depending upon rainfall. If vegetation needs to be replaced, one-time spot fertilization may be needed, preferably using an organic rather than a chemical fertilizer. Each facility should have a customized routine maintenance schedule addressing issues such as the following: grass mowing, weeding, trash removal, mulch raking and maintenance, erosion repair, reinforcement plantings, tree and shrub pruning, and sediment removal.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	Adequate vegetation				Supplement as necessary.	Owner or professional	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste or yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
	Oil, grease or other unauthorized substances are entering the facility				Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc.	Owner or professional	
Pre-Treatment	There is adequate access to the pre- treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is dead vegetation or exposed soil in the grass filter.				Restabilize and revegetate as necessary.	Owner or professional	
	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing.				Remove sediment and correct any other problems that block inflow.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
Inlets	There is evidence of erosion at or around the inlet.				Repair erosion damage and reseed or otherwise restabilize with vegetation.	Owner or professional	
	Inflow is hindered by trees and/or shrubs.				Remove woody vegetation from points of inflow and directly above underdrains. (Trees and shrubs may be located closer to the perimeter.)	Owner or professional	
	There is evidence of rill or gully erosion or bare soil.				Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation.	Owner or professional	
	There is excess sediment accumulation.				Remove immediately.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Side Slopes (*Annually, after major storms*)	Side slopes support nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
	Plant composition is consistent with the approved plans and any stakes or wires are in good condition.				Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species.	Professional	
	There should be 75-90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches deep.				Supplement vegetation and mulch as needed.		
Vegetation (*monthly*)	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,				Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants and mulch may all need to be replaced in accordance with the approved construction plans.	Professional	
	Invasive species or weeds make up at least 10% of the facility's vegetation				Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	
	The grass is too high.				Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high.	Owner or professional	
	Vegetation is diseased, dying or dead.				Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary.	Professional	
	Winter-killed or salt-killed vegetation is present.				Replace with hardier species.	Owner or professional	
	The filter media is too low, too compacted, or the composition is inconsistent with design specifications				Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand 8-12% soil fines 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention	Professional	
	The mulch is older than 3 years or is otherwise in poor condition				The mulch must be replaced every 2-3 years	Professional	
Filter Media (*Annually*)	There is evidence that chemicals, fertilizers, and/or oil/grease are present				Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Filter Media (*Annually*) **(continued)**	There is excessive trash, debris, or sediment.				Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth	Owner or professional	
	There is evidence of concentrated flows, erosion or exposed soil.				Identify the source of erosion damage and prevent it from recurring. Repair the erosion damage and reseed or otherwise restabilize with vegetation.	Professional	
	The filter bed is clogged and/or filled Inappropriately.				Redistribute the soil substrate and remove sediment within 2 weeks.	Professional	
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.).				Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone.	Professional	
	The perforated pipe is not conveying water as designed				Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).				Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. .After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made. The filter media may need to be raked, excavated and cleaned or replaced to correct the problem. Holes that are not consistent with the design and allow water to flow directly through a planter to the ground must be plugged.	Professional	
Underdrain/ Proper Drainage	The planter is unable to receive or detain stormwater prior to infiltration. Water does not drain from the reservoir within 3-4 hours of after a storm event.				Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Underdrain/ Proper Drainage (continued)	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation				Make needed repairs immediately.	Owner or professional	
Planters	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or professional	
Outlet/ Overflow Spillway	There is excessive trash, debris, or sediment at the outlet				Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	
	Any grates present are in good condition				Repair or replace as necessary	Owner or professional	
Observation Well	Is the observation well still capped?				Repair, as necessary.	Professional	
Overall	Access to the Infiltration facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water.				Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
	Mosquito proliferation				Eliminate stangant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Complaints from local residents				Correct real problems	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (continued)	Encroachment on the bioretention area or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	

10 - DRY SWALES: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Facility Location:	Hydraulic Configuration:
☐ Surface	☐ On-line facility
☐ Underground	☐ Off-line facility
Filtration Media:	Type of Pre-Treatment Facility:
☐ No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.	☐ Sediment forebay (above ground)
☐ Sand	☐ Sedimentation chamber
☐ Bioretention Soil	☐ Plunge pool
☐ Peat	☐ Stone diaphragm
☐ Other:	☐ Grass filter strip
	☐ Grass channel
	☐ Other:

Ideally, Dry Swales should be inspected annually in the Spring, triggering such maintenance activities as sediment removal, spot revegetation, inlet stabilization, and repairs to check dams, underdrains and outlets.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste or yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment and Flow Spreaders	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation).				Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Professional	
Pre-Treatment and Flow Spreaders (continued)	There is dead vegetation or exposed soil in the grass filter.				Restabilize and revegetate as necessary.	Owner or professional	
	The pea gravel diaphragm is at the correct level.				Correct the installation, as needed.	Professional	
Inlet and Swale Sides and Base	The inlet provides a stable conveyance into the swale.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion at or around the inlet.				Repair erosion damage and reseed.	Owner or professional	
Check Dams	A check dam is not functioning properly.				Check upstream and downstream sides of check dams for evidence of undercutting, side cutting or erosion and repair immediately.	Professional	
	There is a large accumulation of sediment or trash/debris behind the check dam.				Remove sediment when the accumulation exceeds 25% of the original Tv. Remove trash/debris and clear blockages of weep holes.	Professional	
Vegetation	Invasive species or weeds make up at least 10% of the facility's vegetation				Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	
	Trees form an overhead canopy that may drop leaf litter, fruit and other vegetative materials that may cause clogging.				Prune or remove vegetation and organic litter as necessary.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Vegetation (continued)	Grass height is not consistent with standards.				Dry Swales must be mowed to keep grass at a height of 4" to 9". Remove grass clippings after mowing.	Owner or professional	
	The grass cover is not dense enough or is dead or dying.				Increase watering and reseed, if necessary, to maintain 95% turf cover, but avoid using chemical fertilizers unless absolutely necessary. Replace salt- killed vegetation with salt- tolerant species.	Professional	
Filter Media/ Soil	There is evidence that chemicals, fertilizers, and/or oil are present.				Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed.	Professional	
	There is excessive trash, debris, or sediment.				Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth.	Owner or professional	
Filter Media/ Soil (continued)	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is evidence that chemicals, fertilizers, and/or oil are present.				Remove undesirable chemicals from media immediately, and replace mulch or media as needed.	Professional	
	The perforated pipe is not conveying water as designed.				Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
Underdrain	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).				Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. .After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made.	Professional	
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	
	There is excessive trash, debris, or sediment at the outlet.				Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall	Access to the Infiltration facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Mosquito proliferation				Eliminate stangant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Complaints from local residents				Correct real problems.	Owner or professional	
	Encroachment on the swale or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

11 - WET SWALES: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Facility Location:	Hydraulic Configuration:
☐ Surface	☐ On-line facility
☐ Underground	☐ Off-line facility
Filtration Media:	Type of Pre-Treatment Facility:
☐ No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.	☐ Sediment forebay (above ground)
☐ Sand	☐ Sedimentation chamber
☐ Bioretention Soil	☐ Plunge pool
☐ Peat	☐ Stone diaphragm
☐ Other:	☐ Grass filter strip
	☐ Grass channel
	☐ Other:

Wet Swales have maintenance needs similar to Dry Swales, although woody wetland vegetation may need to be removed periodically.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste or yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment	There is adequate access to the pre-treatment facility				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation).				Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Professional	
Pre-Treatment (continued)	There is dead vegetation.				Replace dead vegetation as necessary.	Professional	
Inlets	The inlet provides a stable conveyance into the swale.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion at or around the inlet.				Repair erosion damage and reseed.	Owner or professional	
Check Dams	A check dam is not functioning properly.				Check upstream and downstream sides of check dams for evidence of undercutting, side cutting or erosion and repair immediately.	Professional	
	There is a large accumulation of sediment or trash/debris behind the check dam.				Remove sediment when the accumulation exceeds 25% of the original Tv. Remove trash/debris and clear blockages of weep holes.	Professional	
Vegetation (*month*l*y*)	Plant composition is consistent with the approved plans.				Replace inconsistent species.	Professional	
	Invasive species (e.g., phragmites) are present.				Remove invasive species immediately and replace vegetation as needed.	Professional	
	Vegetation is dead or dying.				Replace dead vegetation as needed.	Professional	
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	
	There is excessive trash, debris, or sediment at the outlet.				Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall	Access to the Infiltration facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Mosquito proliferation				Eliminate stagnant pools if feasible, and treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Complaints from local residents				Correct real problems.	Owner or professional	
	Encroachment on the swale or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

12 - FILTERING PRACTICES: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Facility Location:	Hydraulic Configuration:
☐ Surface	☐ On-line facility
☐ Underground	☐ Off-line facility
Filtration Media:	Type of Pre-Treatment Facility:
☐ No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.	☐ Sediment forebay (above ground)
☐ Sand	☐ Sedimentation chamber
☐ Bioretention Soil	☐ Plunge pool
☐ Peat	☐ Stone diaphragm
☐ Other:	☐ Grass filter strip
	☐ Grass channel
	☐ Other:

An inspection and clean-up should be scheduled annually to remove trash and floatables that accumulate in the pre-treatment cells and filter bed. Frequent sediment cleanouts in the dry and wet sedimentation chambers are recommended every 2-3 years to maintain the function and performance of the filter. If the filter treats runoff from a hotspot, crews may need to test the filter bed media before disposing of the media and trapped pollutants. If the filter does not treat runoff from a hotspot, the media can be safely disposed by either land application or land filling, without prior testing.

***Warning:** If the filtering facility has a watertight cover; be careful regarding the possibility of flammable gases within the facility. Care should be taken lighting a match or smoking while inspecting facilities that are not vented. If the filtering facility is in a completely enclosed vault, the **OSHA Confined Space Entry** procedures must be followed.*

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area and Side Slopes	Adequate vegetation				Supplement as necessary.	Owner	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste or yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
Pre-Treatment (continued)	There is evidence of erosion and / or exposed soil.				Stabilize immediately.	Owner or professional	
	There is dead vegetation.				Replace dead vegetation as necessary	Professional	
	Perimeter turf (or a grass filter strip) is too high.				Mow at least 4 times a year to keep the grass at a height of 4" to 9". Remove grass clippings after mowing.	Owner or professional	
	There is evidence of oil, grease, clogging (standing water, noticeable odors, water stains, algae).				Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Professional	
Inlets	The inlet provides a stable conveyance into the swale.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion at or around the inlet.				Repair erosion damage and reseed.	Owner or professional	
Sedimentation Chambers	Sediment or debris accumulations are excessive				Clean out the wet and dry sedimentation chambers.	Professional	
Filter Media	If facility takes longer than 48 hours to drain or filter media is discolored, the media is probably clogged.				Replace the top sand layer of an enclosed filter (typically done every 5 years). Till or aerate the surface to improve infiltration and grass cover of an open filter (also typically done every 5 years).		
Oil and Grease	Evidence of filter surface clogging				Clean or replace filter media, as necessary.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Underdrain	The underdrain is not conveying water as designed.				To determine if the pipe is clogged, measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. .After three days, if there is standing water on top but not in the underdrain, this indicates a clogged sand layer that must be replaced. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. Immediately clean out the pipe manually or, if needed, use a high-pressure hose. Replace theunderdrain if it is structurally damaged.	Professional	
Observation Well (*every 2 years*)	Is the observation well still capped?				Repair, as necessary.	Professional	
Outlet	The outlet provides stable conveyance.				Remove blockages and stabilize, as needed.	Professional	
	Evidence of flow bypassing facility				Repair immediately.	Professional	
	Outlets are obstructed or erosion and soil exposure is evident below the outlet.				Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	
Structural Components	Evidence of structural deterioration				Repair as necessary.	Professional	
	Evidence of spalling or cracking of structural components				Repair or replace, as necessary.	Professional	
	Grates are in good condition				Repair or replace, as Necessary.	Owner or professional	
Pump (where applicable)	Catalog cuts and wiring diagram for pump available.				If missing, obtain replacements.	Owner	
	Waterproof conduits for wiring appear to be intact				Repair as necessary.	Professional	
	Panel box is well marked.				If not, mark it correctly.	Professional	
	No evidence of pump failure (excess water in pump well, etc.)				Repair as necessary.	Professional	
Overall	Access to the facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Condition of hydraulic control components				Repair, as necessary.	Professional	
	Complaints from local residents				Correct real problems.	Owner or professional	
	Noticeable odors outside facility				Determine source and eliminate it.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (continued)	Mosquito proliferation				Eliminate stagnant pools if feasible, and treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*.	Owner or professional	
	Encroachment on the filter or easement by buildings or other structures.				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed.	Owner or professional (and perhaps the locality)	

13 - CONSTRUCTED WETLANDS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was Placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Hydraulic Configuration:	Type of Pre-Treatment Facility:
☐ On-line facility	☐ Sediment forebay (above ground)
☐ Off-line facility	☐ Vegetated buffer area
	☐ Grass filter strip
Type of wetland:	☐ Grass channel
☐ Emergent Forested	☐ Other:

During the first 6 months following construction, the wetland should be inspected twice after storm events that exceed 1/2 inch of rainfall. Bare or eroding areas should be stabilized immediately with grass cover. Trees planted in the buffer and on wetland islands and peninsulas need to be watered every 3 days for the first month, and then weekly during the remainder of the first growing season (April-October), depending on rainfall. Due to typical vegetation survival problems, it is typical to plan and budget for a round of reinforcement planting after one or two growing seasons. Constructed wetlands should be inspected and cleaned up annually. A wetland professional should inspect the facility every 5 years, especially to determine if there is any significant negative change in the wetland species composition from the design or an otherwise healthy wetland.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	Adequate vegetation				Supplement as needed.	Owner	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste and yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash and debris				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or exposed soil.				Immediately identify and correct the cause of the erosion and stabilize the eroded or bare area.	Owner or professional	
	Sediment deposits are 50% or more of forebay capacity.				Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5 years.	Professional	
Pre-Treatment (continued)	The sediment marker is not vertical.				Adjust the sediment depth marker to a vertical alignment.	Professional	
	There is dead vegetation.				Revegetate, as needed.	Owner or professional	
Inlets	The inlet provides a stable conveyance.				Stabilize immediately, as needed; clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion/undercutting at or around the inlet.				Repair erosion damage and reseed.	Owner or professional	
	There is cracking, bulging, erosion or sloughing of the forebay dam.				Repair and restabilize immediately.	Professional	
	There is woody growth on the forebay dam.				Remove within 2 weeks of discovery.	Professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area.	Professional	
Vegetation (trees, shrubs, aquatic plants)	Plant composition is consistent with the approved plans.				Determine if existing plant materials are at least consistent with the general Constructed Wetland design criteria, and replace inconsistent species.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Vegetation (trees, shrubs, aquatic plants) **(continued)**	Invasive species are present.				Remove invasive species immediately and replace vegetation as needed. As a general rule, control of undesirable invasive species (e.g., cattail and Phragmites) should commence when their coverage exceeds more than 15% of a wetland cell area. Although the application of herbicides is not recommended, some types, such as Glyphosate, have been used to control cattails with some success. Extended periods of dewatering may also work, since early manual removal provides only short-term relief from invasive species.	Professional	
	Vegetation is dead or reinforcement planting is needed.				Remove and replace dead or dying vegetation.	Professional	
	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season.				Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall.	Owner or professional	
Vegetation (trees, shrubs, aquatic plants) **(continued)**	Practice has become overgrown and is not developing into a mature wetland.				Harvest vegetation periodically if the wetland becomes overgrown or to guide maturing of forested wetlands (typically 5 and 10 years after constr.).	Owner or professional	
Wetland Cells and Pools	Sediment accumulation is 50% or more of capacity.				Dredge the sediment to restore the design capacity.	Professional	
	There is evidence of floating debris, sparse vegetative cover, erosion or slumping of side slopes.				Remove debris. Repair and stabilize.	Owner or professional	
	Open water is becoming overgrown.				Harvest the unwanted vegetation.	Professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.		
Riser/Principle Spillway and Low-Flow Orifice(s)	There is adequate access to riser for maintenance.				Establish adequate access.	Professional and, perhaps, the locality	
	Pieces of the riser are deteriorating, misaligned, broken or missing.				Repair immediately.	Professional	
	Adjustable control valves are accessible and operational.				Repair, as needed.	Professional	
	Reverse-slope pipes and flashboard risers are in good condition.				Repair, as needed.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Riser/Principle Spillway and Low-Flow Orifice(s) (continued)	There is excessive trash, debris, or other obstructions in the trash rack.				Remove immediately.	Owner or professional	
	Seepage into conduit				Seal the conduit.	Professional	
Berm/Dam/ Embankment and Abutments	There is sparse veg. cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing of the dam.				Repair and restabilize immediately.	Professional	
	There are soft spots, boggy areas, seepage or sinkholes present.				Reinforce, fill and stabilize immediately.	Professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed frm area.	Professional	
	There is woody vegetation on the embankment.				Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years.		
Emergency Spillway	There is woody growth on the spillway.				Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years.	Owner or professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
	There is evidence of erosion/back-cutting.				Repair erosion damage and reseed.	Owner or professional	
	There are soft spots, seepage or sinkholes.				Reinforce, fill and stabilize immediately.	Owner or professional	
Outlet	The outlet provides stable conveyance from the wetland.				Stabilize as needed.	Professional	
	There are excessive sediment deposits.				Remove sediment.	Professional	
	Released water is causing undercutting, erosion or displaced rip-rap at or around the outlet.				Repair, reinforce or replace rip rap as needed, and restabilize.	Professional	
	Woody growth within 5 feet of the outlet pipe barrel.				Prune vegetation back to leave a clear discharge area.	Owner or Professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
Overall	Access to the facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Water levels in one or more cells are abnormally high or low.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (continued)	Complaints from local residents				Correct real problems.	Owner or professional	
	Mosquito proliferation				Eliminate stagnant pools if feasible, and treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied *only if absolutely necessary*. Can also stock the basin with mosquito fish to provide natural mosquito & midge control.	Owner or professional	
	Encroachment on the wetland or easement by buildings or other structures.				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	
	Safety signage is not adequate.				Provide sufficient, legible safety signage.	Owner or professional	

14 - WET PONDS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Pond characteristics and functions
(check all that apply)

☐ Water quality treatment
☐ Extended detention included
☐ Channel protection
☐ Ties into groundwater
☐ Single cell pond
☐ Multiple-cell pond system
☐ Pond with one or more wetland cells

Hydraulic Configuration:

☐ On-line facility
☐ Off-line facility

Type of Pre-Treatment Facility:

☐ Sediment forebay (above ground)
☐ Vegetated buffer area
☐ Grass filter strip
☐ Grass channel
☐ Other:

During the first 6 months following construction, the pond should be inspected twice after storm events that exceed 1/2 inch of rainfall. The aquatic benches should be planted with emergent wetland species, consistent with the Wet Pond design specifications. Bare or eroding areas around the pond buffer should be stabilized immediately with grass cover. Trees planted in the buffer need to be watered every 3 days for the first month, and then weekly during the remainder of the first growing season (April-October), depending on rainfall. Due to typical vegetation survival problems, it is typical to plan and budget for a round of reinforcement planting during the second growing season after construction. Wet Ponds should be inspected and cleaned up annually.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	Adequate vegetation				Supplement as needed	Owner	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There are excessive landscape waste and yard clippings.				Remove immediately and recycle or compost.	Owner or professional	
Pre-Treatment	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or exposed soil.				Immediately identify and correct the cause of the erosion and stabilize the eroded or bare area.	Owner or professional	
Pre-Treatment (continued)	Sediment deposits are 50% or more of forebay capacity.				Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5-7 years, and earlier if performance is being affected.	Professional	
	The sediment marker is not vertical.				Adjust the sediment depth marker to a vertical alignment	Professional	
	There is evidence of clogging.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications.	Professional	
	There is dead vegetation.				Revegetate, as needed.	Owner or professional	
Inlet	The inlet provides a stable conveyance into the pond.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion/undercutting at or around the inlet				Repair erosion damage and restabilize.	Owner or professional	
	There is cracking, bulging, erosion or sloughing of the forebay dam.				Repair and restabilize immediately.	Professional	
	There is woody growth on the forebay dam.				Remove within 2 weeks of discovery.	Professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
	There is more than 1 inch of settlement.				Add fill material and compact the soil to the design grade	Owner or Professional	
	The inlet alignment is incorrect.				Correct immediately.	Owner or Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Vegetation	Plant composition is consistent with the approved plans.				Determine if existing plant materials are consistent with the general Wet Pond design criteria, and replace inconsistent species.	Professional	
	Invasive species are present.				Remove invasive species immediately and replace vegetation as needed.	Professional	
	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season.				Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall.	Owner or professional	
	Grass around the facility is overgrown.				Mow (at least twice a year) to a height of 4"-9" high and remove grass clippings.	Owner or professional	
Vegetation (continued)	Vegetation is dead or reinforcement planting is needed.				Remove and replace dead or dying vegetation.	Professional	
Permanent Pool and Side Slopes	There is excessive trash and/or debris.				Remove immediately	Owner or professional	
	There is evidence of sparse vegetative cover, erosion or slumping side slopes.				Repair and stabilize physical damage, and reseed or plant additional vegetation.	Owner or professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Remove burrowing animals humanely from the area.		
	There is significant sediment accumulation.				Conduct a bathymetric study to determine the impact to design volumes, and dredge if necessary.	Professional	
Riser/Principle Spillway and Low-Flow Orifice(s)	There is adequate access to the riser for maintenance.				Establish adequate access	Professional and, perhaps, the locality	
	Pieces of the riser are deteriorating, misaligned, broken or missing.				Repair immediately.	Professional	
	Adjustable control valves are accessible and operational.				Repair, as needed.	Professional	
	Reverse-slope pipes and flashboard risers are in good condition.				Repair, as needed.	Professional	
	There is evidence of clogging.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specs.	Professional	
	Seepage into conduit				Seal the conduit	Professional	
	There is excessive trash, debris, or other obstructions in the trash rack.				Remove immediately.	Owner or professional	
Dam/ Embankment and Abutments **Dam/ Embankment and Abutments (continued)**	There is sparse veg. cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing of the dam.				Repair and restabilize immediately, especially after major storms.	Professional	
	There are soft spots, seepage, boggy areas or sinkholes present.				Reinforce, fill and stabilize immediately.		

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Dam/ Embankment and Abutments (continued)	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area.		
	There is woody vegetation on the embankment.				Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years.		
Overflow/ Emergency Spillway	There is woody growth on the spillway.				Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years.	Owner or professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
	There is evidence of erosion/backcutting				Repair erosion damage and Reseed.	Owner or professional	
	There are soft spots, seepage or sinkholes.				Reinforce, fill and stabilize immediately.	Owner or professional	
	Only one layer of stone armoring exists above the native soil.				Reinforce rip-rap or other armoring materials.	Professional	
Outlet	The outlet provides a stable conveyance from the pond.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is woody growth within 5 feet of the outlet pipe barrel.				Prune vegetation back to leave a clear discharge area.	Owner or Professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
	There are excessive sediment deposits at the outlet.				Remove sediment.	Professional	
	Discharge is causing undercutting, erosion or displaced rip-rap at or around the outlet.				Repair, reinforce or replace rip rap as needed, and restabilize.	Professional	
Overall	Access to the facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Fences are inadequate				Collapsed fences must be restored to an upright position. Jagged edges and damaged fences must be repaired or replaced.	Professional	
	Water levels in one or more cells are abnormally high or low.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications.	Professional	
	Complaints from local residents				Correct real problems.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (continued)	Mosquito proliferation				Eliminate stagnant pools and stock the basin with mosquito fish to provide natural mosquito & midge control. Treat for mosquitoes as needed. If spraying, then use mosquito larvicide, (e.g., Bacillus thurendensis or Altoside formulations) *only if absolutely necessary*.	Owner or professional	
	Encroachment on the pond or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	
	Safety signage is not adequate.				Provide sufficient, legible safety signage.	Owner or professional	

15 - EXTENDED DETENTION PONDS: O&M CHECKLIST

Inspection Date: _____ VSMP Permit No.: _____

Project: _____

Location: _____

Date BMP was placed in Service: _____ Date of Last Inspection: _____

Inspector's Name: _____

Owner / Owner's Representative: _____

As-Built Plans available: Y / N

Facility Type: Level 1 _____ Level 2 _____

Pond characteristics and functions
(check all that apply)
☐ Water quality treatment
☐ Channel protection
☐ Ties into groundwater

Hydraulic Configuration:
☐ On-line facility
☐ Off-line facility

Type of Pre-Treatment Facility:
☐ Sediment forebay (above ground)
☐ Vegetated buffer area
☐ Grass filter strip
☐ Grass channel
☐ Other:

Ideally, Extended Detention Ponds should be inspected annually. ED Ponds are prone to a high clogging risk at the ED low-flow orifice. Ideally, the orifice should be inspected at least twice a year after initial construction. The constantly changing water levels in ED Ponds make it difficult to mow or manage vegetative growth. The bottom of ED Ponds often become soggy, and water-loving tees such as willows may invade and will need to be managed. Periodic mowing of the stormwater buffer is required only along maintenance rights-of-way and the embankment. The remaining buffer may be managed as a meadow (mowing every other year) or forest. Frequent removal of sediment from the forebay (every 5-7 years, or when 50% of the forebay capacity is filled) is essential to maintain the function and performance of the ED Pond. Sediments excavated from ED Ponds are usually not considered toxic or hazardous, so they can be safely disposed of either by land application of land filling.

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	Adequate vegetation				Supplement as needed.	Owner	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil.				Stabilize immediately.	Owner or professional	
	There is excessive landscape waste and yard clippings.				Remove immediately.	Owner or professional	
Pre-Treatment	There is adequate access to the pre-treatment facility.				Establish adequate access.	Professional and, perhaps, the locality	
	There is excessive trash and debris.				Remove immediately.	Owner or professional	
	There is evidence of erosion and/or exposed soil.				Immediately identify and correct the cause of the erosion and stabilize the eroded or bare area.	Owner or professional	
Pre-Treatment (continued)	Sediment deposits are 50% or more of forebay capacity.				Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5-7 years, and earlier, as needed.	Professional	
	The sediment marker is not vertical.				Adjust the sediment depth marker to a vertical Alignment.	Professional	
	There is evidence of clogging.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications	Professional	
	There is dead Vegetation.				Revegetate, as needed.	Owner or professional	
Inlet	The inlet provides a stable conveyance into the pond.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is excessive trash, debris, or sediment.				Remove immediately.	Owner or professional	
	There is evidence of erosion/undercutting at or around the inlet				Repair erosion damage and restabilize.	Owner or professional	
	There is cracking, bulging, erosion or sloughing of the forebay dam.				Repair and restabilize immediately.	Professional	
	There is woody growth on the forebay dam.				Remove within 2 weeks of discovery.	Professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
	There is more than 1 inch of settlement.				Add fill material and compact the soil to the design grade	Owner or Professional	
	The inlet alignment is incorrect.				Correct immediately.	Owner or Professional	
Vegetation	Plant composition is consistent with the approved plans.				Determine if existing plant materials are consistent with the general Wet Pond design criteria, and replace inconsistent species.	Professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Vegetation (continued)	Invasive species are present.				Remove invasive species immediately and replace vegetation as needed.	Professional	
	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season.				Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall.	Owner or professional	
	Grass around the facility is overgrown.				Mow (at least twice a year) to a height of 4"-9" high and remove grass clippings.	Owner or professional	
	Vegetation is dead or reinforcement planting is needed.				Remove and replace dead or dying vegetation.	Professional	
Permanent Pool and Side Slopes	There is excessive trash and/or debris.				Remove immediately.	Owner or professional	
	There is evidence of sparse vegetative cover, erosion or slumping side slopes.				Repair and stabilize physical damage, and reseed or plant additional vegetation.	Owner or professional	
	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area.	Owner or professional	
	There is significant sediment accumulation.				Conduct a bathymetric study to determine the impact to design volumes, and dredge if necessary.	Professional	
Riser/Principle Spillway and Low-Flow Orifice(s)	There is adequate access to the riser for maintenance.				Establish adequate access.	Professional and, perhaps, the locality	
	Pieces of the riser are deteriorating, misaligned, broken or missing.				Repair immediately.	Professional	
	Adjustable control valves are accessible and operational.				Repair, as needed.	Professional	
	Reverse-slope pipes and flashboard risers are in good condition.				Repair, as needed.	Professional	
	Seepage into conduit				Seal conduit	Professional	
	There is evidence of clogging.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specs.	Professional	
	There is excessive trash, debris, or other obstructions in the trash rack.				Remove immediately.	Owner or professional	
Dam/ Embankment and Abutments	There is sparse veg. cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing.				Repair and restabilize immediately, especially after major storms.	Professional	
	There are soft spots, seepage, boggy areas or sinkholes.				Reinforce, fill and stabilize immediately.		

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Dam/ Embankment and Abutments (continued)	There is evidence of nuisance animals.				Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.		
	There is woody vegetation on the embankment.				Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years.		
Overflow/Emergency Spillway	There is woody growth on the spillway.				Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years.	Owner or professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
	There is evidence of erosion/backcutting				Repair erosion damage and reseed	Owner or professional	
	There are soft spots, seepage or sinkholes.				Reinforce, fill and stabilize immediately.	Owner or professional	
	Only one layer of stone armoring exists above the native soil.				Reinforce rip-rap or other armoring materials.	Professional	
Outlet	The outlet provides a stable conveyance from the pond.				Stabilize immediately, as needed, and clear blockages.	Owner or professional	
	There is woody growth within 5 feet of the outlet pipe barrel.				Prune vegetation back to leave a clear discharge area.	Owner or Professional	
	There is excessive trash, debris, or other obstructions.				Remove immediately.	Owner or professional	
	There are excessive sediment deposits at the outlet.				Remove sediment.	Professional	
	Discharge is causing undercutting, erosion or displaced rip-rap at or around the outlet.				Repair, reinforce or replace rip rap as needed, and restabilize.	Professional	
Overall	Access to the facility or its components is adequate.				Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	Fences are inadequate				Collapsed fences must be restored to an upright position. Jagged edges and damaged fences must be repaired or replaced.	Professional	
	Water levels in one or more cells are abnormally high or low.				Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications.	Professional	
	Complaints from local residents				Correct real problems.	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/ N	Investigate? Y / N	Repaired? Y / N	How to Fix Problem	Who Will Address Problem	Comments
Overall (continued)	Mosquito proliferation				Eliminate stagnant pools and stock the basin with mosquito fish to provide natural mosquito & midge control. Treat for mosquitoes as needed. If spraying, then use mosquito larvicide, (e.g., Bacillus thurendensis or Altoside formulations) *only if absolutely necessary*	Owner or professional	
	Encroachment on the pond or easement by buildings or other structures				Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	
	Safety signage is not adequate.				Provide sufficient, legible safety signage.	Owner or professional	

APPENDIX R

Example Notice of Corrective Action

[Date]

[Addressee]
[Name of Company]
[Street Address]
[City, State, Zip Code]
Via [*Certified Mail or Hand Delivered*]

RE: Notice of Corrective Action
[*Project Name, Location, VSMP Permit No.*]

Dear [Addressee]:

On [*Fill in date of inspection.*], the Campbell County staff inspected the [*Fill in the name of construction site and VSMP Permit number.*] for compliance with the Virginia Stormwater Management Program (VSMP). During the inspection, staff observed the following conditions:

[Describe the offending conditions. Use bullets. For example:

1. *A significant amount of sediment had left the site and accumulated in an adjacent wetlands area.*
2. *At the time of inspection, a review of facility records revealed that inspections had not been performed at the required frequency.*
3. *The Stormwater Pollution Prevention Plan (SWPPP) was not available onsite at the time of inspection.]*

An inspection report documenting these observations is attached.

[*Include any relevant facts that may help explain the situation (e.g., the person with whom you spoke, what was said, etc.) [Include if relevant and helpful--During prior inspections conducted on {Give dates of any previous inspections}], staff observed similar conditions. Please see the attached inspection reports.*]

[*Include relevant citatio*ns.]

The VSMP Regulations at [*Fill in citation.*] require that [*State requirement*]. [*For example:*

1. *The VSMP Regulations at 9VAC25-880-70 Requires that escaped sediments be removed to minimize off site impacts;*]

While Campbell County makes no determination at this time regarding the observations documented by the staff, there appear to be discrepancies between the conditions observed at the [*Fill in name of site.*] and the requirements of the VSMP governing those conditions. Please contact [*Fill in Inspector's name.*] within five days of the date of this letter [*Fill in date.*] either to explain the apparent discrepancies or to describe any relevant changes in the conditions at the site. [*Allow five days if you deliver the NOCA by hand and 10 days for certified mail*].

The purpose of this letter is to provide you with information Campbell County has gathered regarding the [*Fill in name of site.*] and to solicit additional information from you regarding conditions observed at the site. This letter is not a case decision as defined in the Virginia Administrative Process Act, Virginia Code § 2.2 - 4001.

If the alleged discrepancies described above cannot be resolved to the satisfaction of Campbell County within the time allotted, Campbell County will pursue formal enforcement action regarding the allegations in this NOCA. The Virginia Stormwater Management Act provides for civil penalties of up to $32,500 per day for any violation of the Act, the VSMP Regulations, or any condition of a permit issued pursuant to the Act.

If you have any questions regarding the above, please contact me at XXXXXX.

Sincerely,
Campbell County

[Author's Name]
[Title]

[Enclosure or Attachment]

cc: